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ENVIRONMENTAL ASSESSMENT -- DEVELOPMENT CONCEPT PLAN

December 1985

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DEPOSITORY

LEES FERRY

Glen Canyon National Recreation Area
Arizona

National Park Service - Rocky Mountain Region

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ENVIRONMENTAL ASSESSMENT - DEVELOPMENT CONCEPT PLAN

For the Lees Ferry Development Zone, Glen Canyon National Recreation Area, Coconino County, Arizona.

National Park Service
United States Department of the Interior

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SUMMARY OF PROPOSED PLAN

The proposal presented in this document includes provisions to continue improvement of vehicular circulation patterns; improved camping, group use and environmental education area; reduction of adverse visual impacts associated with facilities; relocation of the maintenance area; stabilization of structures within the Lees Ferry and Lonely Dell Ranch Historic Districts; new visitor contact/administrative facility; interpretive trails; improved interpretive services; operation of Lonely Dell as a working ranch; and continuation of current commercial activities .

Specific improvements associated with the proposed plan include:

- 5,300 square foot visitor contact/administrative building with a 50-60 stall parking lot.

- Improved river launching facilities.

- .8 miles of interpretive trail construction to connect the Lees Ferry and Lonely Dell Ranch Historic Districts.

- 2 National Park Service duplex units, 6 unit apartment.

- 1,800 square foot maintenance shop.

- 1,000 square feet of covered storage.

- Relocation of existing amphitheater and expansion to 200 seats.

- Relocation of trailer dump station.

- Stabilization of historic structures.

- Operation of Lonely Dell as a working ranch.

- Replacement of existing water storage tower with ground level water storage tank.

CHAPTER I

PURPOSE AND NEED

INTRODUCTION

This environmental assessment/development concept plan (EA/DCP) was prepared to examine the possible environmental consequences of various management and development alternatives at the Lees Ferry development zone of the Glen Canyon National Recreation Area (NRA).

Glen Canyon National Recreation Area occupies approximately 1,255,000 acres of northern Arizona and southern Utah. The recreation area was established "to provide for public outdoor recreation use and enjoyment of Lake Powell and lands adjacent thereto...and to preserve scenic, scientific and historic features contributing to public enjoyment of the area." Lake Powell was formed by an impoundment of the Colorado River in 1964. The reservoir exists primarily for the purpose of flood control, river regulation, irrigation, and hydroelectric power generation.

The Lees Ferry developed area lies in north central Arizona in Coconino County, approximately 15 miles south of the Glen Canyon Dam and 50 road miles from the city of Page, Arizona. Vehicular access to the site is via US Highway 89A. Lees Ferry is the southernmost portion of the Glen Canyon National Recreation Area and adjoins Grand Canyon National Park. The boundary of Grand Canyon National Park follows the historic high flow mark of the Colorado River upstream to the confluence with the Paria River.

It lies in the general vicinity of the confluence of the Colorado River with the Paria River. Much of the area is on a floodplain and was subject to occasional inundation by both rivers. With the construction of the Glen Canyon Dam, the flooding along the Colorado River has been eliminated, although there have been some high releases from the dam which cause high river levels, but no flooding of the Lees Ferry area. With the growth of development and farming along the upper reaches of the Paria River, the flow in that river has been greatly reduced in the last 25 years. The existing development zone is comprised of 280 acres.

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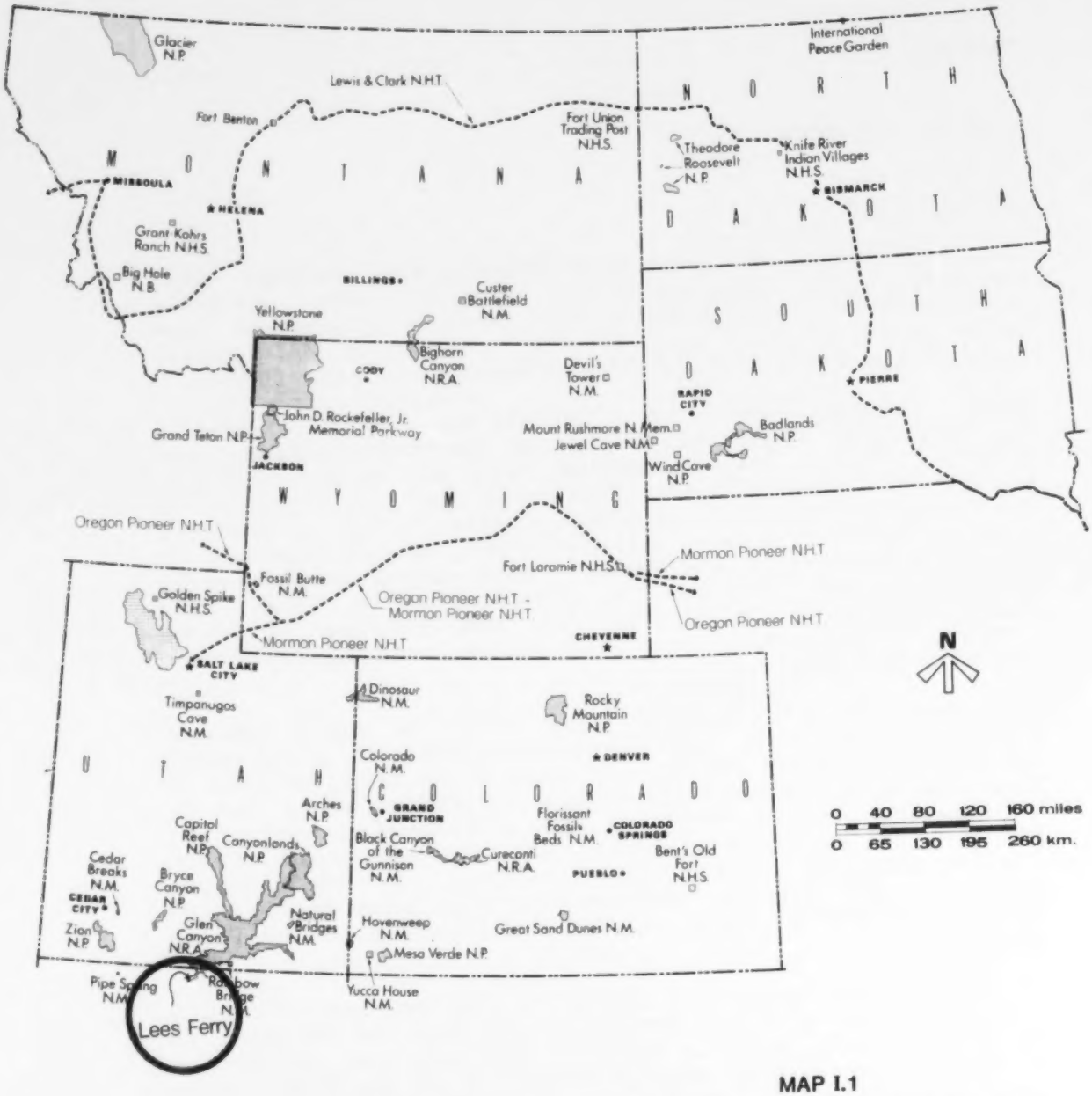

MAP I.1

ROCKY MOUNTAIN REGION

National Park Service

United States Department of the Interior

Legend

- Locations of Major Cities
- Locations of State Capitals
- State Boundary Lines
- National Park Service Areas
- ----- National Park Service Historical Trails

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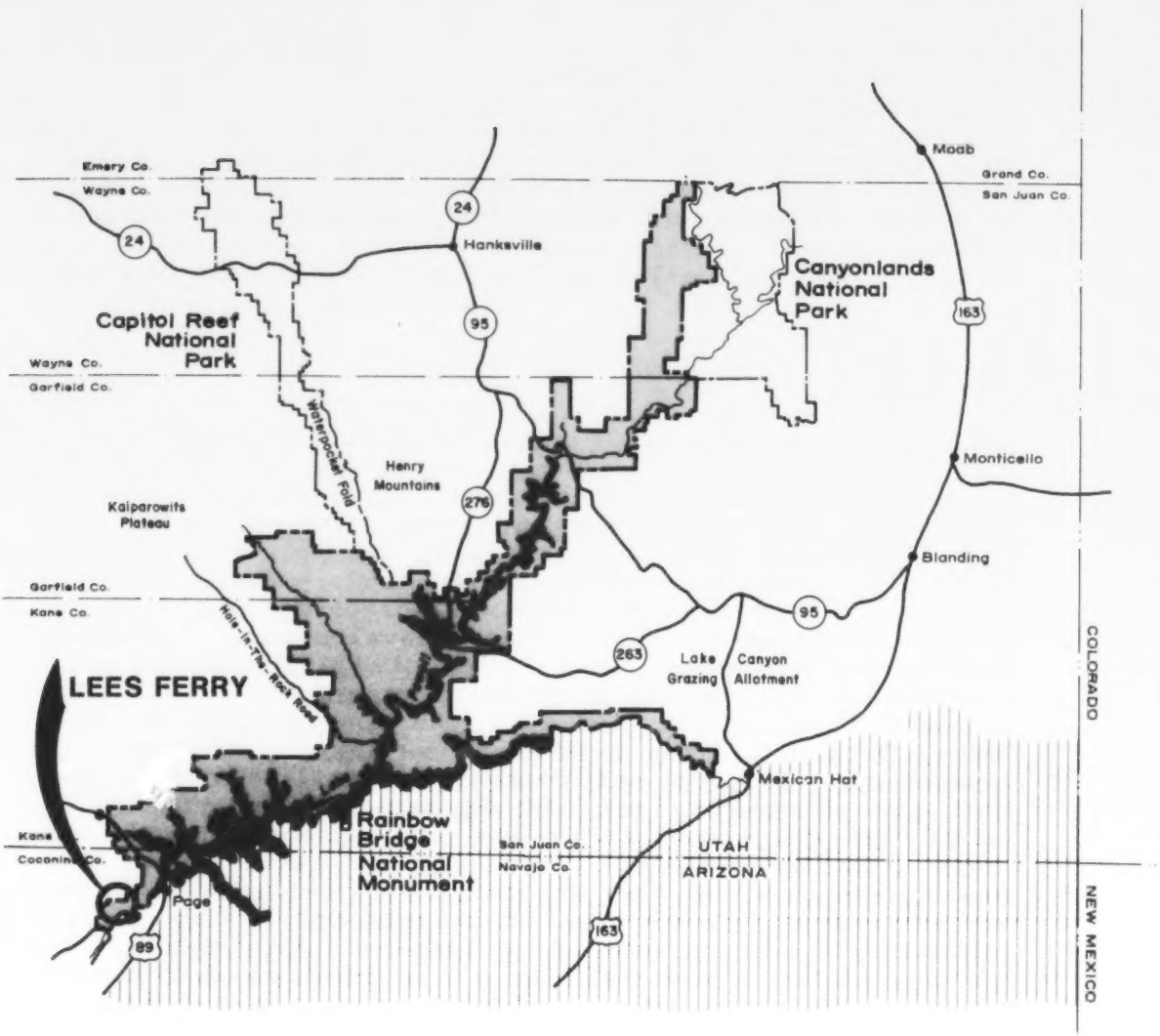

LEGEND

Glen Canyon N.R.A.

Navajo Indian Reservation

N

0 10 20 miles

0 15 30 kilometers

MAP I.2

LEES FERRY

VICINITY MAP

GLEN CANYON NATIONAL RECREATION AREA

utah-arizona

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

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Lees Ferry was the river crossing of the Colorado used by Mormon pioneers going south from Utah into Arizona to establish Mormon communities. It was also the route used by the Mormons going to the Temple in St. George. As such, it was a vital link for the Mormon Church and played an important part in the history of the Church expansion and settlement. There are two (2) historic districts within the Lees Ferry developed area, the Lees Ferry Historic District and the Lonely Dell Ranch Historic District.

PURPOSE

The development of Lees Ferry was included in the General Management Plan for the Glen Canyon National Recreation Area (1979). A developed area plan was prepared for Lees Ferry in 1961 and amended in 1968. Based on the amendment, comprehensive plans were prepared in 1970 which located extensive concessioner development, including lodging and restaurant facilities. Utility systems were constructed by the National Park Service to handle this proposed development. In 1978 the concessioner at Lees Ferry, Fort Lee Co., decided that they did not want to develop the lodging and restaurant facilities and that they also wanted to get rid of the existing concession facilities they operated, with the exception of their river trips between Glen Canyon Dam and Lees Ferry. This was agreed to by the National Park Service and the concessioner's possessory interests were subsequently purchased by the National Park Service. A portion of the sewage system constructed for the concession development was abandoned when the concession operation was removed from Lees Ferry. Currently, the only concession operations at Lees Ferry are the commercial river trips through the Grand Canyon and between the Glen Canyon Dam and Lees Ferry. Because there have been so many changes in the scope and type of facilities identified as needed and desirable at Lees Ferry, the existing plans are totally obsolete. The purpose of this environmental document is to analyze various development concept plan alternatives that will provide the National Park Service direction for management of the Lees Ferry developed area for about the next 10 to 20 years.

NEED

The need for this planning effort is dictated by changing conditions, use patterns, and demands in and near the Lees Ferry area. These changes are documented in the issues listed below. Issues were first identified by the Regional Office and Glen Canyon National Recreation Area staff. These issues were distributed for public comment in a scoping brochure. Beginning in January 1984, the public responded to that scoping effort. Following the response period the issues were refined to reflect the public attitudes and ideas.

ISSUES

Issues are the areas of concern which constitute the significant subjects or questions of discussion and interest regarding development and use of Lees Ferry. Each issue presented is a combination of several related concerns or problems identified by the public and the National Park Service.

ISSUE A: HOW WILL HISTORIC AND ARCHEOLOGIC SITES AND RESOURCES BE MANAGED IN THE LEES FERRY AREA?

This issue includes the protection and management of the Lees Ferry and Lonely Dell Ranch Historic Districts. Many people felt that the Lonely Dell Ranch should be restored and operated as a living history museum, including restoration of the orchards and other vegetation. They also felt that the Lees Fort should be restored and managed as a significant historic site. These publics felt a museum for artifact storage and display should be provided. Other issues focused on adaptive use of the historic structures for other purposes.

This issue also included the commemorative plaques located adjacent to the base of the Navajo High Bridge as well as the archeologic sites along the Colorado River and within the developed area. Some of the respondents felt that the plaques should be removed and displayed in a safer location and that additional management actions are needed to protect the river's archeologic resources.

Other respondents felt that the current management and conditions of historic and archeologic resources are sufficient and, therefore, the National Park Service

should leave them as is.

ISSUE B: HOW WILL VISITOR USE BE MANAGED AND REGULATED IN THE LEES FERRY AREA?

This issue includes visitor use patterns, regulations, and user or entrance fees. Some of the respondents felt that the number of boats on the river between Lees Ferry and the Glen Canyon Dam should be limited. They also felt that motor size, speed, and wake size should be limited. Some respondents also felt that camping upriver should be prohibited and the area reserved for day use only. Some respondents also felt that there should be a daily entrance fee, while others felt that the current conditions should be maintained and no entrance fee charged.

Issue C: WHAT LEVEL AND TYPE OF VISITOR USE FACILITIES ARE APPROPRIATE AT LEES FERRY?

Some respondents felt that the current facilities at Lees Ferry are adequate and should be left at current levels. Other respondents felt that improvement of visitor facilities is necessary. Some indicated a need to relocate or rehabilitate the existing campground, while others felt that the campground should be eliminated and camping facilities provided outside the Park and operated by private enterprise. Some respondents indicated a need for a "throw-down" camping area with minimum development for tent users and backpackers.

Items identified by respondents as needs included an entrance sign, expanded parking for single vehicles as well as buses and improved interior roads. Trail improvements were identified as needed to improve the safety of existing trails and to provide interpretation and pedestrian access between the Lonely Dell Ranch, Lees Fort, and Lees Ferry and the recreation facilities within the area.

Also identified by respondents were improved day use facilities, expanded downriver rigging area, and improved sanitary facilities. Because of launch ramp design, considerable traffic congestion and user conflicts occur at the launch ramp during periods of high use. This results in delays and user stress at the launch ramp; corrective actions require investigation.

ISSUE D: HOW CAN LEES FERRY BE MANAGED TO MAINTAIN OR IMPROVE FISHING FACILITIES?

Many people felt that the majority of the users at Lees Ferry are fishermen. They indicated a need for closer working relations between the Glen Canyon National Recreation Area and the Arizona Game and Fish Department, better enforcement of fishing regulations, and relocation of campsites along the Colorado River to nonproductive fishing areas.

ISSUE E: HOW SHOULD THE NATURAL RESOURCES BE PROTECTED AND MANAGED AT LEES FERRY?

The need for additional personnel was identified by several respondents. The personnel would be for the enforcement of regulations to protect the resources and for the operation and maintenance of the historic facilities. Respondents also felt that the resources along the Paria and the Colorado rivers should be protected and that firewood cutting should be stopped in these areas.

Many respondents felt that the overhead power lines, water storage tank, and the employee housing area were a visual intrusion on the area and should be corrected. The power lines should be buried; the housing area and the water storage tank should be relocated. Other respondents felt that the cost of relocation of these facilities was prohibitive and the relocation should not be made.

ISSUE F: HOW SHOULD INTERPRETIVE AND EDUCATION PROGRAMS BE MANAGED AT LEES FERRY?

Some respondents indicated a need for additional interpretive personnel and expanded interpretive programs. The need for a facility at or near the launch ramp was identified and the need for a great deal more emphasis on the historic resources. An interpretive trail was also mentioned which would connect the Lonely Dell Ranch Historic District with the Lees Ferry Historic District. The need for an amphitheatre in the campground was identified.

Many respondents felt that provisions for local school education programs at Lees Ferry should be provided, while others felt that these facilities should be located

on nearby National Forest lands where resources for education are more available.

ISSUE G: HOW SHOULD COMMERCIAL OPERATIONS BE MANAGED AT LEES FERRY AND ARE CONCESSION OPERATIONS NEEDED AND APPROPRIATE?

This issue includes the need to share raft rigging and boat launching facilities between commercial operations and the public. Some respondents felt that all commercial operations other than the Grand Canyon raft trips should be prohibited at Lees Ferry, while others felt that commercial operations should be expanded through concession operated boat rental and low impact camping equipment rental.

ISSUE TREATMENT

Some of the above issues are operational in nature, such as regulations of boat numbers and boat sizes on the Colorado River, coordination with the Arizona Game and Fish Department, and enforcement of fishing regulations. These operational issues are not addressed in this document but will be addressed by staff of Glen Canyon National Recreation Area during their daily operations.

Issues relating to camping and archeological sites along the Colorado River outside the development zone are addressed in the Upriver Recreation Plan and Environmental Assessment for Lees Ferry.

The remaining issues formed the basis for alternatives considered in this environmental assessment. Each issue is addressed in the proposal or other alternatives.

CHAPTER II

THE PROPOSAL

INTRODUCTION

The proposal presented in this chapter constitutes the Park Service's proposed development concept plan for the Lees Ferry development zone. Other alternatives were developed to address the issues in various ways. Issues are displayed in Chapter I and descriptions of other alternatives considered are displayed in Chapter III. The alternatives have different emphasis. Consequently, each provides a different response to the issues.

This proposal provides for improved vehicular circulation patterns; improved camping, group use, and environmental education area; reduction of adverse visual impacts associated with facilities; relocation of the maintenance area; stabilization of Lees Ferry and Lonely Dell Ranch structures and implementation of a cyclic maintenance program; new visitor/administrative facility; interpretive trails and improved interpretive services; operation of Lonely Dell as a working ranch; and continuation of current commercial activities (i.e. fishing trips and river raft trips).

VISITOR FACILITIES

Visitor Contact - Provisions for visitor contact and Glen Canyon/Grand Canyon administrative operations are provided in a 5,300-square-foot facility located between Lees Fort and boat launch ramps. This facility is designed to accommodate approximately 80 percent of the visitors during the peak-use season (May-July), or about 470 visitors per day. Forty to fifty (40-50) single vehicle parking stalls serve the visitor contact facility, upriver bank fishermen, and other dispersed uses that originate from this area. A separate six-stall bus parking lot serves tour groups and recreation vehicles, and a six-stall administrative parking lot is provided.

The design concept applied to the visitor/administrative facility is one of the present to past. The visitor/ administrative facility is oriented so the more modern facilities associated with boat launching and parking serve the main entrance. After a tour through the

facility, the visitor can exit from the back and step into the past at the Lees Ferry Historic District.

Within the complex will be an information center, exhibit rooms, auditorium, rest rooms and 1,400 square feet of administrative facilities. The structure, built between the ramp area and the historic district, will create a "wall" between the two. The structure includes interpretive displays as well as observation areas which will allow the visitor to have a panoramic view of the historic district, river running operations as well as views upriver and the historic roads to the Lees Ferry crossing. The front of the building will include a "patio" area which may be used for outdoor display. The rear of the building will open onto the historic scene and the view upriver to the upper ferry crossing. From this historic area the view is of the visitor facility and river, with the launch ramp and parking area hidden from view. This helps the visitor more freely experience the history of the area.

The design concept applied to the visitor/administrative facility should be sensitive to the historic district. Design should be simple with exterior facades constructed of materials that repeat natural landscape characteristics while maintaining a "historic" appearance when viewed from the historic district.

Launch Ramp and Associated Facilities - The boat launching area is reconstructed following a design concept that segregates upriver users from down river rafting activities. Defined vehicular circulation patterns are provided by distinct entrance and exit points to each launch ramp. Mixing of the two traffic patterns is avoided. Views from the access road are terminated by the proposed visitor/administrative facility. A reconstructed 20-25 stall parking lot serves the existing comfort station and overflow to the visitor/administrative facility.

Launch ramp parking is restricted to the long-term boat/trailer parking lot located approximately 1,000 feet west of the launching area. This existing facility is expanded to a total capacity of 150 stalls. During periods of peak use, this parking lot also serves as the visitor/administrative facility recreation vehicle parking lot.

To help minimize delays in boat launching, a boat ready area is provided along the access road. To serve river

running operations, a "throw down" camping area, with no developed facilities, is located west of the down river launch ramp.

Campground - The single family campground capacity of 56 sites is maintained; however, the land use base is expanded to alleviate congestion and enhance visitor experiences. Group sites are provided on a new campground loop that would serve special activities and environmental education programs. Each camp site includes a use area, picnic table, fire pit, and barbeque grill. The 200 seat amphitheater is relocated near the campground using rock faces of surrounding slopes as a backdrop.

Landscape management techniques are employed to reduce adverse visual impacts created by the campground. All facilities are painted with tones that repeat colors of the surrounding landscapes. New or reconstructed facilities use a rough textured surface to reduce and confine reflection. When possible, trees and other vegetation are used to provide shade rather than manmade shade structures.

Picnic Area - The existing 26 vehicle parking lot and sealed vault toilet are maintained at Paria Beach. New improvements include picnic tables and barbeque grills for 10-15 picnic sites. This area is within boundaries of Grand Canyon National Park expanded in the Grand Canyon Enlargement Act of 1976.

Group Use/Environmental Education - Facilities to accommodate these uses are provided in the new campground loop. Provisions that allow closing the loop to general public use when the area is reserved for groups are provided.

Trailer Dump Station - This facility is relocated near the campground to minimize visitor use in the National Park Service maintenance and residential areas.

CIRCULATION PATTERNS

Roads - Improvement of vehicular circulation patterns are not part of this proposal because they have been previously identified, but are summarized as follows. The main park access road is relocated to provide views of the Colorado River thereby enhancing visitor experiences. Visitor use through the maintenance and residential areas is avoided. All new intersections use a "T" approach.

Improvement of circulation patterns requires construction of .38 miles of road, reconstruction of .81 miles of road, obliteration of 1.15 miles of road, and construction of a new bridge across the Paria River. Access to the Lonely Dell Ranch is improved by paving .17 miles of the existing gravel road terminating at a 30-35 stall parking lot which serves the ranch but is located so as not to disrupt the historic scene.

Trails - Trail systems within the developed area are intended to provide a "link" of the Lonely Dell Ranch and Lees Ferry Historic Districts as well as access to outlying developed and dispersed areas. An interpretive trail, approximately .8 miles in length, with exhibits and waysides to interpret history of the area connects Lonely Dell Ranch with Lees Ferry and the visitor/administrative facility.

A trail from the visitor/administrative facility to the upriver ferry site crossing is provided using existing trail alignment where possible. This .9 mile trail is designed for the physically disabled and elderly with emphasis on interpretation.

The Paria Canyon Trail is marked and trailhead information and registration boards are provided within the developed area. The old sewage lagoon access road is rehabilitated and converted to a route to provide pedestrian access to outlying areas of Lees Ferry.

The Navajo Bridge Trail is closed. Commemorative plaques are removed and relocated to the proposed visitor/administrative facility with the consent of individual owners.

COMMERCIAL OPERATIONS

Commercial operations are restricted to Grand Canyon river running operations, and fishing guides and raft trips between the Glen Canyon Dam and Lees Ferry.

INTERPRETATION

Interpretation at Lees Ferry will focus mainly on the history of the area from prehistoric time up to present day activities. Lees Ferry has a very rich and varied

historical background, which is one of the prime development objectives as stated in the General Management Plan for Glen Canyon National Recreation Area.

The visitor contact station will be operated on a year round basis. The information center will be staffed from 8:00 a.m. to 5:00 p.m., seven days a week, with the time expanded from 7:00 a.m. to 7:00 p.m. during the periods of heavy visitation. The information available will be on Lees Ferry, Glen Canyon National Recreation Area, regional parks, and the National Park Service in general. A sales outlet will be operated by the Glen Canyon Natural History Association.

Auditorium programs will be available throughout the operating hours. A special 20-minute, multi-media slide program or video program will be developed about Lees Ferry. It will include the entire human history of the area and the cultural, recreational, and natural significance of Lees Ferry. It will cover the river, Lees Ferry Historic District, and Lonely Dell Ranch Historic District. The program will offer a general orientation to casual and first-time visitors to the area. Other programs will be developed dealing with river orientation, fishing, historic figures, etc., for special tours, river runners, environmental classes, etc.

The exhibit rooms will deal primarily with the human history of Lees Ferry, starting with the Desert Culture (nomadic people) approximately 5000 BC - 2000 BC. It will carry through to the present including exploration, trapping, ferry crossing, ranching, Mormon expansion, mining, river runners, and U.S.G.S. operations. In addition, an exhibit on the natural history and recreational aspects of the area will be included.

The Lees Ferry Historic District will be presented to the visitor in two ways: guided tours and/or self guided wayside exhibits and pamphlets. The variety of subjects available on the 1.25-mile trail from the visitor contact station to the upper ferry crossing site encourages visitor involvement. They include petroglyphs, gold mining operations, steamboat operation, ferry operations, exploration, and river running.

The buildings in the area will be stabilized and presented through a series of wayside exhibits which recreate, visually and verbally, the way the area was at

the time they were originally used and their use in later operations. Some of the buildings could be refurnished to offer glassed-in viewing access.

The trail along the river from the fort area to the upper ferry crossing will be reconstructed to provide a walkway usable by the elderly and handicapped with appropriate rest stops and benches along the way. There will also be wayside exhibits to interpret the various points of historical interest along the trail. This trail will also provide access for fishermen to upriver bank fishing.

A trail will also be constructed to link the Lees Ferry Historic District with the Lonely Dell Ranch Historic District. This trail will lead from the visitor contact station, along the Paria River, to the Lonely Dell ranch. This trail will turn near the long-term boat launch parking lot. The Paria Wilderness trailhead will be relocated near the long-term launch ramp parking area. Parking for this trailhead is provided by the long-term parking lot.

The Lonely Dell Ranch Historic District will be developed as a working ranch. A bulletin board will be placed adjacent to the parking area just outside the ranch boundary and will include general information, ranch information, and safety information. A series of wayside exhibits will portray life on the ranch from the time it was founded by Lee to the time it was acquired by the National Park Service. These will be presented in a collage format. The topics will revolve around farming, hardships, existing structures, cemetery, and dude ranch activities.

The working ranch will be used as an interpretive feature. Programs will be presented in which people are active participants. School programs could be developed and presented on a prearranged basis during weekdays for nine months of the year. The outbuildings and portions of the ranch house will be individually rehabilitated and furnished for the appropriate period of use. Each of the periods will be distinct to show the variety of stages the ranch went through in its 100 year history. A full time person will be needed to operate the ranch and will live in the apartment attached to the Weaver ranch house. Management of the Ranch under the Historic Property Leasing or similar program will be explored. This will reduce NPS operating costs while ensuring protection of the animals and ranch and continued maintenance of the

facilities. This will also insure upkeep of the historic district and structures.

By creating a working ranch the Park will be able to present an active window on the history of the area. By using a variety of farming techniques (hand to modern mechanisms) the NPS will be able to portray the ranch in the various time periods from 1871 to 1974. In addition, livestock appropriate to the various periods will be maintained. In addition, agricultural production can be developed on 45 acres of farm land to help support the operation of the ranch.

A program of cyclic maintenance for the historic structures will have to be developed in accordance with NPS guidelines.

The launch ramp area will receive more formalized interpretation than at present. Interpreters will help out with boat checkouts, roving interpretation and will be available for guided tours through the two historic districts. There will also be a bulletin board complex at the launch ramp area. It will deal primarily with river safety and survival. Additional information will be offered on fishing, camping, hiking, and boating.

The amphitheatre will be used year round to present programs on various themes and sub-themes of Lees Ferry, Glen Canyon National Recreation Area, and the National Park Service. Each of the programs will begin and end with appropriate safety messages. The body of the programs will address specific topics of interest to groups in the campground. Each season brings a variance in the type of camper (i.e. fishermen, river runners, etc.).

In addition to on-going evening programs, the amphitheatre will also be used for large group presentations (i.e. environmental education, school presentations, etc.).

Bulletin boards are a primary source of information to the visitor. Adequate numbers of boards, with professionally presented information, are essential. They should be considered an integral part of the overall interpretive and safety programs for the park. The format will be standardized and recognizable as a National Park Service installation.

The campgrounds receive fairly heavy visitation during the fall, winter, and spring months. It is an initial focal

point for late night arriving campers, fishermen, and hikers. Professionally presented, accurate information will be available at the entrance to the campground, the sanitary dump station, and the group loop area. This information will include registration procedures, water safety on the river, fishing regulations, area description, and evening programs.

Cultural Resource Management

Lonely Dell Ranch Historic District - The District will be operated as a working ranch under the Historic Property Leasing or similar program. The buildings will be rehabilitated and partially furnished with furniture of the period being interpreted. Some of the structures have been used over several historic periods. The area will be researched in depth to determine actual uses during the various occupations. A determination needs to be made as to the type of crops which were grown and the acreages cultivated. The orchard, which was planted in the 1960's, will be replanted with fruit trees and several acres of the historically cultivated fields will be planted to a cash crop.

Those structures which will be rehabilitated and furnished include the small log cabin believed to have been built by John D. Lee, the blacksmith shop, root cellar, barn, and the Weaver ranch house. The locations of past corrals will be determined and they will be rebuilt. The foundations of the two houses which burned will be located and marked.

A cyclic maintenance program will be set up to assure proper maintenance of the historic and other structures and facilities within the historic district. This will be implemented upon completion of the rehabilitation of the structures.

Adjust Historic District Boundaries - Boundaries of the historic district should be analyzed and adjusted to delete areas not related to historic values and contain non-historic improvements.

Lees Ferry Historic District - The structures within the District will be stabilized to prevent further deterioration. Those structures to be stabilized include the Lees Fort, post office, Spencer building, and U.S.G.S.

building adjacent to the Spencer building. Also stabilized will be the chicken coop and corrals behind the fort. The remains of the steamboat "Charles H. Spencer" will not be stabilized, but left where they are in the river.

Archeological sites - Prehistoric and historic period archeological remains will be managed to protect their scientific and interpretive value. Prior to any development, cultural surveys and resource evaluation for the National Register of Historic Places will be carried out in accordance with Executive Order 11593, the 1966 National Historic Preservation Act as amended, and National Park Service historic preservation policies. All areas to be affected, either directly or indirectly, will be surveyed prior to any surface disturbance. All cultural resources will be avoided by development activities if at all possible, and mechanisms established whereby these resources will be protected (such as relocating project activities or fencing a significant site, etc.). However, if it is not possible to avoid known sites, mitigation work consisting of mapping, testing, excavation or other activities appropriate to the resource involved, will be carried out prior to any development.

If archeological remains are discovered during earth-disturbing activities, that construction work will halt until the resources can be evaluated by a professional archeologist and appropriate mitigation undertaken. Final reports documenting the measures taken to avoid and protect all known remains will be produced as part of the compliance activities.

Prehistoric sites could be included in new interpretive programs developed as a part of the overall expansion of the Lees Ferry visitor contact program. Interpretive themes can be directed at rock art sites or at a broader spectrum of archeological sites.

NATURAL RESOURCE MANAGEMENT

Coordination Requirements - Several other federal and state agencies have responsibilities on or adjacent to Lees Ferry. These include Grand Canyon National Park, the Bureau of Land Management, the Bureau of Reclamation, U.S. Geological Survey, U.S. Fish and Wildlife Service, and Arizona Game and Fish Department. Also, the Navajo Nation has responsibilities on lands adjacent to Lees Ferry.

Grand Canyon personnel are responsible for the check-out of all river trips through the Grand Canyon. Through a cooperative agreement between Glen Canyon National Recreation Area and Grand Canyon National Park, the area personnel assist each other as needed.

The Bureau of Land Management is responsible for the administration of areas surrounding the Lees Ferry developed area of the Glen Canyon National Recreation Area, and in particular, is responsible for the administration of the Paria Wilderness.

The Bureau of Reclamation administers the Glen Canyon Dam and is responsible for the flow regime of the Colorado River, determining and implementing the flows through the dam.

The U.S. Geological Survey monitors the flows of both the Colorado River and the Paria River at Lees Ferry. They maintain cableways across both rivers at Lees Ferry.

U.S. Fish and Wildlife Service is responsible for threatened and endangered species in the area.

The National Park Service coordinates with the Navajo Nation in the management of the lands bordering the Lees Ferry area on the south side of the Colorado River. This land is a portion of the Navajo Indian Reservation.

Arizona Game and Fish Department manages the fish and wildlife in the area, particularly the trout fishery of the Colorado River. They manage a stocking program for this fishery.

Landscape/visual management - All architectural structures and landscape modifications will be designed to blend in with or compliment the historic districts and the surrounding natural characteristics of the land, taking into consideration mass, form, line, color, and texture. Reducing the visual impacts of facilities on the landscape can be accomplished by applying the basic principles of location, selection, screening, and confinement.

Location

Locating facilities using landscape management techniques is perhaps the most valuable tool available for reducin

adverse visual impacts. The location of a development affects earthwork and vegetation modifications and also determines whether the facility will be visually dominant. Visual dominance will usually result in a higher public awareness of manmade changes in the landscape.

The amount of disturbance to the existing soils and vegetation can create either a positive or negative deviation from the existing landscape. The extent of the impact is influenced by the severity of the alteration, as well as the overall size of the area disturbed. The configuration and color of manmade structures can also draw attention to a development or blend with the background. In all cases, the objective should be to minimize the amount of visual contrast with the existing environment.

Locating facilities on gentler slopes rather than steep slopes can reduce the area of disturbance. Small cut and fill slopes create less contrast in soil color and are less likely to result in erosion. Disturbed slopes that are laid back to blend with the existing slopes are easier to revegetate than steeper slopes.

Construction activities on steep slopes may require large near-vertical cuts and fills. Revegetation of these slopes is difficult and the contrast with the natural landscape creates adverse visual effects.

Locating facilities near unique landscape features should be avoided. Such vistas hold the viewer's attention for a long period, thus the visual disturbances become more obvious. Visual impacts and public awareness of landscape alterations can be minimized by locating facilities away from areas with repetitive or long viewing times.

Selection

Careful selection of the types of facilities and construction techniques used can reduce the disturbance of the landscape. Selection may involve specifying a type of facility whose characteristics - color, shape, size - repeat the characteristics of the surrounding natural landscape. Consideration must also be given to structure design and color to blend as much as possible with the characteristic landscape.

Landscapes dominated by vertical lines can be complimented with vertical formed structures, and landscapes dominated by horizontal lines can be complimented with low profile

facilities.

Bright colored facilities reflect light and usually contrast with the natural landscape's color and texture, creating undesirable visual impacts. This situation should be avoided.

Flat, dull colored facilities reduce light reflection and, therefore, reduce contrast with the landscape. A rough textured facade will also help reduce reflection.

Slope rounding and warping techniques can also be used during road construction. Slope rounding and warping techniques break sharp unnatural edges formed by cut and fill slopes. Warping can be used to add vertical diversity by varying the pitch of cut or fill slopes, thereby reducing visual impacts.

Screening

Full or partial screening of facilities from sensitive or dominant views can be used to reduce visual impacts. Screening is accomplished with vegetation, land forms, and manmade structures.

When full screening of activities is desirable, strategic location in conjunction with vegetation can be used.

Partially screening or baffling views with vegetation can be used to reduce visual impacts by breaking up unnatural lines and forms associated with some facilities. Vegetation also serves to confine reflection and to create a shade-shadow effect, producing texture on otherwise textureless surfaces.

If properly planned, manmade land forms or berms can be used for partial screening of facilities. Strategic location of excess soil can be a valuable tool to reduce visual impacts.

Confinement

Visual impacts are reduced by confining the facilities to the smallest area possible.

All of the proposed facilities in the recommended proposal are located in sites already disturbed and/or developed. Landscape/visual management techniques will be employed to

blend these facilities visually with the scenery and background or to make them less harsh and obtrusive.

The metal screens and shade structures at the campground will be replaced in part with trees, shrubs, and land forms to give the area a more natural appearance. The existing campground is highly visible from the access road, picnic area, ranger station, and the housing area. It will be highly visible, from the proposed realigned access road, being skylined. The shade structures are also highly visible being a turquoise color and a unique shape. By removing shade structure and wind screens, mass plantings, and minimal earth berms, the campground area should be almost totally hidden from the road. This same technique can be employed around the periphery of the NPS housing area to effectively screen it from most of the other developed sites.

The proposed maintenance area and water storage tank are located roughly between the campground and the housing area and are highly visible from both. The removal of the existing elevated water storage tank and construction of a new low-profile water storage tank will make this area much less dominant. This location is presently the site of the ranger station/visitor contact. With some berm work, physical screening as well as plant material, the maintenance area will be effectively screened from the campground and the visual impact greatly lessened from the NPS housing area.

The National Park Service housing area is located on a terrace overlooking the Colorado River. Because of this location, it is highly visible from several of the developed areas. It can be seen skylined from the launch ramp area as well as from the access road between the launch ramp area and the Paria River. It is visible from the campground and the existing access road as the visitor approaches the campground area. The existing housing units, except for the single wide trailer, are low profile and of a finish and color which blends them in with the surrounding area. The use of earth berms and strategically placed masses of vegetation will almost totally screen the housing area from the other areas.

The picnic area is located on the bank of the Colorado River, and because of the natural vegetation has very minimal visual impact on the surrounding areas of development. Some additional plantings of natural materials will maintain this screening.

The Lees Ferry Historic District has had development situated within its boundaries in the past. The original concession area, which included restaurant, store, gas station and trailers, was located here. When the concessioner was bought out, these facilities were removed, but the area was never restored. The comfort station and launch ramps are adjacent to the historic district and there is no visual separation of the uses. Under this proposal, the visual management will be the visitor contact facility itself. The building will be constructed of a material which is compatible in color and texture with the surrounding area consistent with NPS-28 guidelines. The building will serve as a visual and physical barrier between the launch ramp/parking activities (modern scene) and the historic scene. This will require the use of plant material as well as walls and/or fences.

The Lonely Dell Ranch Historic District is located at a distance from the other activities and is separated from them by the Paria River and natural vegetation. Because of this it has no visual impact on any of the other developments and is likewise unimpacted visually by them. The parking area serving this facility will be bermed and planted to hide it from the historic scene.

Rehabilitation Needs - All those areas where roads are obliterated will be revegetated with native plant species as determined by the Resource Management Division. This revegetation work will include the scarifying of materials and the recontouring to as near an original grade as possible.

Other Elements - Tamarisk is an exotic species which has invaded disturbed sites at Lees Ferry. Selected areas will be vegetatively manipulated to make them more accessible to the visiting public. Tamarisk thickets will be thinned to select for larger individual trees. This will provide canopy cover for birds and wildlife and open understory for visitor use. The Resource Management Division will conduct studies into the most appropriate and cost effective techniques before implementing this program.

Administrative/Maintenance

Maintenance Area - This area is relocated to the site of

the existing visitor contact facility. The existing structure is approximately 1209 square feet and consists of 321 square feet of comfort station facilities, 287 square feet visitor contact area, 90 square feet of first aid room, 108 square feet of office space, 78 square feet of utility area, and 325 square feet of carport area. This structure will have to be modified and enlarged to provide approximately 1800 square feet of shop/warehouse area. This facility will include warehouse/storage; shop area with power equipment for carpentry, painting, plumbing and mechanical work; toilet and shower facilities; and office space. Approximately 1,000 sq. ft. of covered storage needs to be provided. Also included in this area will be approximately 800 sq. ft. of firehouse structure either as a part of the maintenance building or a separate facility. Gasoline and diesel fuel storage and dispensing facilities need to be included in the development, and the area needs to be fenced. Topographic and vegetative screening needs to be done to mitigate visual impacts. The water treatment plant will remain in its present location. The existing elevated water storage tank will be replaced with a ground level tank with the appropriate pumps to provide necessary water pressure. The new water storage tank will be located in the maintenance area.

Residential area - Employee housing is maintained in its present location. All trailers are removed. In addition to the three existing single family units, two 2-bedroom duplex units are needed for permanent employees and six 2-bedroom apartment units are needed for seasonal personnel. Included in this development is a multi-purpose children's play area.

Administrative Facility - The office needs for this proposal include the following:

Interpretation
- 1 office for two (2) permanent employees
- 2 offices for four seasonal employees (2 per office)
- 1 audiovisual/lab/library/program preparation area

Visitor Protection
- 1 office for two (2) permanents
- 2 offices for 3-4 seasonal employees (2 per office)

Administration
- 1 office for a clerk-typist with an opening to an information desk/reception area

Other
- 1 office mail, file, xerox, supply, etc.

2 restrooms (1 male, 1 female)
1 break room with sink, refrigerator, soda machine, microwave, table, chairs, etc.

The maintenance office will be in the maintenance facility.

Staffing Requirements - Following are the staffing requirements required for implementation of this proposal. These requirements recognize the use of volunteers and the Historic Property Leasing Program to operate Lonely Dell Ranch. These are staffing for Glen Canyon National Recreation Area needs only.

Permanent Employees

- Interpretation		
Park Ranger	GS-07	2 W.Y.
- Visitor Protection		
Park Ranger	GS-09	1 W.Y.
Park Ranger	GS-07	1 W.Y.
- Maintenance		
Water Treatment Plant Operator	WG-09	1 W.Y.
Maintenance Worker	WG-08	1 W.Y.
- Administration		
Clerk-Typist/Reception	GS-04	1 W.Y.

Seasonal Employees

- Interpretation		
Park Ranger (3)	GS-05	1.8 W.Y.
Park Ranger	GS-04	0.6 W.Y.
- Visitor Protection		
Park Ranger (2)	GS-05	0.8 W.Y.
- Maintenance		
Maintenance Worker (2)	WG-05	1.5 W.Y.

Fees

Establishment of a fee collection station just inside the area should be considered if legislation can be changed to

allow collection of fees. Location of the fee station should be near the current sewage lagoon access road intersection.

Construction Cost Estimates - Following are the gross construction cost estimates for development of Lees Ferry. These estimates are based on the October 1984, Class 'C' estimating guide, Denver Service Center, National Park Service. Because road improvement needs were previously identified, they are not included as part of this proposal.

Visitor/Administrative Facility

- 5,300 square foot building	$1,384,000
- 40-50 stall public parking lot	90,000
- 6 stall bus/RV parking lot	39,000
- 6 stall administrative parking lot	12,000
	$1,525,000

River Launching Facilities

- Launch Ramp Vehicular Circulation Rehabilitation	$ 150,000
- 20-25 stall comfort station parking lot reconstruction	24,000
- 150 stall long-term parking expansion	494,000
- Boat Ready Area (6 units)	40,000
- Government Dock (4 boat capacity)	26,000
	$ 734,000

Trails

- .8 miles interpretive trail	$ 58,000
- .9 miles Lees Crossing trail	55,000
- Paria Canyon Trail Signing	15,000
	$ 128,000

Residential Area

- 2 duplex units	$ 335,000
- 6 unit apartment	368,000
	$ 703,000

Maintenance Area

- 1,200 square foot shop rehabilitation	$ 61,000

- 600 square foot shop new construction	83,000
- 1,000 square foot covered storage	36,000
- 800 square foot firehouse	29,000
- Maintenance yard fencing	18,000
- Fuel storage & Pumps	20,000
	$ 247,000

Campground

- Rehabilitate existing area	$ 45,000
- New campground loop	358,000
- New comfort station	65,000
- 200 seat amphitheater	40,000
- Relocate trailer dump station	51,000
	$ 559,000

Picnic Area

- 15 picnic sites	$ 19,000
	$ 19,000

Lees Ferry Historic District

- Stabilize Spencer Buildings	$ 73,000
- Stabilize Lees Crossing Ruins	25,000
	$ 98,000

Lonely Dell Ranch Improvements

- Ranch cash crop field irrigation system	$ 32,000
- Weaver House Rehabilitation	$ 102,000
- Stabilize Log Barn	36,000
- Landscape Rehabilitation	90,000
- Cemetary Fencing	4,000
- Weaver House Exhibits	32,000
	$ 296,000

Utilities

- 150,000 gallon ground level storage tank	$ 265,000
- Septic systems	108,000
- 2,000 L.F. 6" Water distribution line	62,000
	$ 435,000

GRAND TOTAL	$4,744,000

Phasing - Following is the conceptual phasing program for Lees Ferry. Elements of each phase should be

substantially completed prior to performing the elements of the next phases.

Phase I

Visitor/Administrative Facility, including 5,300 square foot structure, public parking, bus parking, and administrative parking	$1,525,000
Maintenance Area, including 1,200 square foot shop rehabilitation, 600 square foot shop, 1,000 square foot covered storage, 800 square foot firehouse and yard fencing	247,000
Residential area including 2 duplex units and 6 unit apartment	$ 703,000
Lees Fort Stabilization and Lonely Dell Ranch improvements - Ranch irrigation system for cash crop	394,000
Utilities including water lines and septic system	170,000
	$ 3,039,000

Phase II

River Launching Facilities including launch ramp rehabilitation, parking, dock, and ready area	$ 734,000
Historic Districts and Lees Crossing trails	128,000
Campground with rehabilitation, group loop, amphitheater, and trailer dump station	559,000
Picnic Area rehabilitation	19,000
150,000 gallon ground level water storage tank	265,000
	$ 1,705,000

Annual Operations and Maintenance Costs - Annual operations and maintenance costs required upon full implementation of this proposal is $485,000.

Major Compliance Responsibilities

1. National Environmental Policy Act of 1969 (42 U.S.C. 4321) - Compliance with this act is being accompanied through this public planning process, and the environmental assessment, which is tiered upon the recreation area's general management plan/FES.

2. Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470), Advisory Council on Historic Preservation, and the Arizona State Historic Preservation Office - These offices will be involved throughout the planning project reviews and consultations.

3. Bureau of Reclamation - The Bureau of Reclamation is being consulted during planning and will be asked to review the document as it relates to surface and subsurface water resources.

4. Aids to Navigation - The National Park Service will coordinate with the U. S. Coast Guard as it relates to the planning and implementation of the appropriate aids to navigation.

5. Section 404 Corps of Engineers - The National Park Service will coordinate with the Corps any clearances required for improvement of the water related facilities. This will be accomplished during the in-house and public reviews. Subsequent reviews will be required during the project design phases. With design plans for any element within the water zone, a construction permit will be required from the Corps.

6. Section 7 of the Rare and Endangered Species Act of 1973 (16 U.S.C. 1531) - U.S. Fish and Wildlife Service - Input was obtained during planning; however, review and consultation will be required during the official project review periods.

7. Executive Order 11988 "Flood Plain Management" - Even though the major development is not affected by any flood plain, the existing long-term parking lot is located within the Paria River 100 year flood frequency zone. When the final decision regarding this DCP is made, a Statement of Findings will be prepared as required by 45 FR 35916 and revised in 47 FR 36718.

There will be other permits to be obtained after plan approval at the time of design documentation associated

with drinking water, sewage treatment, and health and safety.

LEGEND

- EXISTING PAVED ROAD
- EXISTING GRAVEL OR DIRT ROAD
- EXISTING TRAIL
- HISTORIC HIGH FLOW LEVEL
- EXISTING BUILDING, COMFORT STATION, HOUSE, SHED OR TRAILER

PROPOSED ACTIONS

- **A** 5900 sq ft VISITOR CONTACT / ADMINISTRATIVE FACILITY; PARKING (57 VEHICLES)
- **B** RECREATION LAUNCH AREA AND ASSOCIATED FACILITIES - WIDEN UPRIVER LAUNCH RAMP, INSTALL TRAFFIC CONTROL BUOYS TO SEPARATE UPRIVER AND RIVER RUNNERS LAUNCH RAMPS; PROVIDE PARKING (24 VEHICLES) NEAR COMFORT STATION (SEE MAP II 2 FOR DEVELOPMENT CONCEPTS)
- **C** EXPAND LONG TERM PARKING (TOTAL CAPACITY 150 VEHICLES - 49 SINGLE VEHICLES, 101 VEHICLES WITH TRAILERS)
- **D** BOAT READY AREA
- **E** CONSTRUCT NEW CAMPGROUND LOOP (WHICH CAN ACCOMMODATE GROUP CAMPS); MAINTAIN CURRENT OVERALL CAPACITY OF 156 SITES
- **F** REDUCE CAPACITY OF EXISTING CAMPGROUND BY APPROXIMATELY 25% - REDUCE ADVERSE VISUAL IMPACT BY USE OF LANDSCAPE MANAGEMENT TECHNIQUES
- **G** RELOCATE 200 SEAT AMPHITHEATER
- **H** 10-15 SITE PICNIC AREA; PARKING (26 VEHICLES)
- **I** RELOCATE RV DUMP STATION
- **J** CONSTRUCT NEW ACCESS ROAD
- **K** CREATE T-ANGLED INTERSECTIONS
- **L** REMOVE ROAD SECTIONS; REGRADE TO NATURAL APPEARING CONDITION
- **M** CONSTRUCT NEW PARKING AND ROADWAY SECTION
- **N** PAVE LONELY DELL RANCH ACCESS ROAD; CONSTRUCT 55 VEHICLE PARKING LOT
- **O** PROVIDE HISTORIC DISTRICT TRAIL WITH INTERPRETIVE EXHIBITS
- **P** MARK PARIA CANYON TRAIL; PROVIDE TRAILHEAD INFORMATION AND REGISTRATION BOARDS
- **Q** REHABILITATE OLD SEWAGE LAGOON ACCESS ROAD; CONVERT TO PEDESTRIAN TRAIL ACCESS ROUTE
- **R** DEVELOP INTERPRETIVE TRAIL TO UPRIVER FERRY SITE CROSSING DESIGNED FOR PHYSICALLY DISABLED
- **S** RELOCATE MAINTENANCE AREA FACILITIES; MAINTAIN WATER TREATMENT FACILITIES IN CURRENT LOCATION
- **T** CONSTRUCT 6 UNIT APARTMENT COMPLEX AND 2 DUPLEX UNITS; REMOVE MOBILE HOME; MAINTAIN REMAINING STRUCTURES
- **U** REPLACE EXISTING WATER TOWER WITH GROUND LEVEL WATER STORAGE TANK
- **V** RESTORE LONELY DELL RANCH FACILITIES AND OPERATE AS A WORKING RANCH
- **W** STABILIZE STRUCTURES WITHIN LEES FERRY HISTORIC DISTRICT; DEVELOP SELF GUIDED TOUR
- **X** RECONSTRUCT RIVER FRONT ROAD
- **Y** FEE STATION SITE

MAP II.1

PROPOSED DEVELOPMENT CONCEPT PLAN

LEES FERRY

GLEN CANYON NATIONAL RECREATION AREA

UTAH · ARIZONA

UNITED STATES DEPARTMENT OF THE INTERIOR · NATIONAL PARK SERVICE

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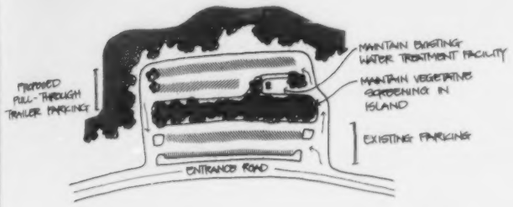
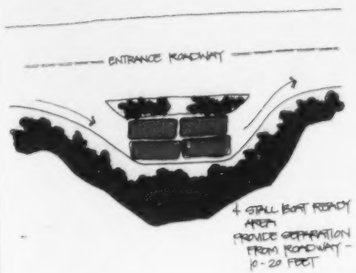
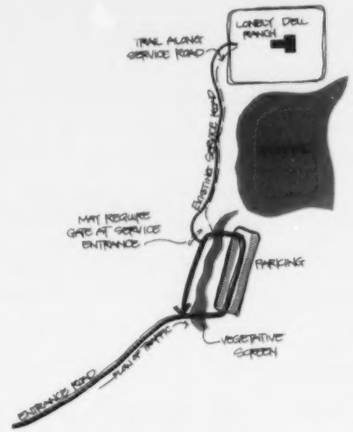


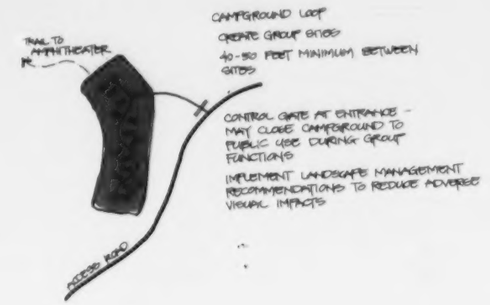
LONG TERM PARKING EXTENSION

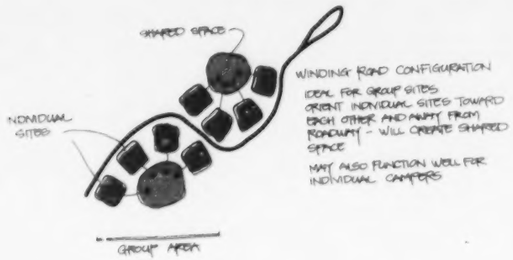


BOAT READY AREA



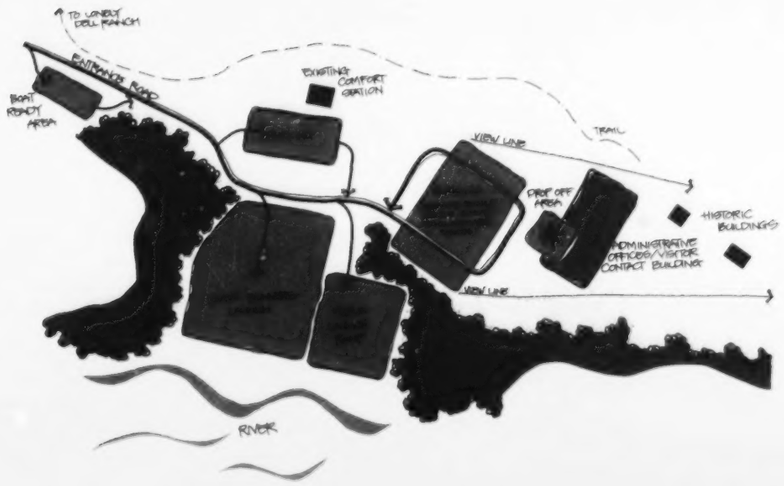
LONELY DELL RANCH ACCESS AND PARKING


TRAIL TO AMPHITHEATER
CAMPGROUND LOOP
CREATE GROUP SITES
40-50 FEET MINIMUM BETWEEN SITES
CONTROL GATE AT ENTRANCE - MAY CLOSE CAMPGROUND TO PUBLIC USE DURING GROUP FUNCTIONS
IMPLEMENT LANDSCAPE MANAGEMENT RECOMMENDATIONS TO REDUCE ADVERSE VISUAL IMPACTS
ACCESS ROAD


SHARED SPACE
WINDING ROAD CONFIGURATION
IDEAL FOR GROUP SITES
ORIENT INDIVIDUAL SITES TOWARD EACH OTHER AND AWAY FROM ROADWAY - WILL CREATE SHARED SPACE
MAY ALSO FUNCTION WELL FOR INDIVIDUAL CAMPERS
INDIVIDUAL SITES
GROUP AREA

GROUP CAMPGROUND LOOP

EMPLOYEE RESIDENTIAL AREA EXPANSION



ADMINISTRATIVE OFFICES / VISITOR CONTACT BUILDING AND BOAT LAUNCH AREA

DESIGN CONCEPTS

MINIMIZE CONFUSION AND CONGESTION BY SEPARATING USES - ACHIEVE WITH CIRCULATION SYSTEM LAYOUT

CONSIDER VIEWS FROM ROADWAY, BUILDING, AND PARKING LOTS - FOCUS ON RIVER, RIVER RUNNERS, BUILDING OR HISTORIC AREAS (AS APPROPRIATE)

PROVIDE CONVENIENT PARKING WHILE MINIMIZING MASSES OF PAVED SURFACE - ACHIEVE BY USE OF LARGE ISLANDS

CONSIDER MANAGEMENT'S NEED TO OCCASIONALLY CONTROL PARKING LOTS

KEEP NEED FOR EXCESSIVE GRADING TO A MINIMUM, MINIMIZE VEGETATION REMOVAL (SEVERE EROSION HAZARD)

POSITION ADMINISTRATIVE OFFICES / VISITOR CONTACT BUILDING TO BLOCK VIEW OF HISTORIC BUILDINGS FROM ALL POINTS IN PARKING LOT, 'FUNNEL' VISITORS INTO BUILDING TO PROMOTE GENERAL SCHEMES OF NEW TO OLD - INTRODUCE VISITORS TO THE OLD FROM INSIDE BUILDING

HIKING TRAIL FROM HISTORIC AREA TO LONELY DELL RANCH TO STAY TO NORTH OF DEVELOPED AREA, FOLLOW CONTOURS TO KEEP TO 8½% MAXIMUM GRADE, SEPARATE FROM CLIFF AT ROADWAY IF POSSIBLE

MAP 112

AREA SPECIFIC DEVELOPMENT CONCEPTS

LEES FERRY

GLEN CANYON NATIONAL RECREATION AREA
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CHAPTER III

ALTERNATIVES CONSIDERED

INTRODUCTION

This chapter contains the descriptions of the various alternatives considered in this environmental assessment. The National Park Service proposal and preferred alternative is illustrated in Chapter II. Three other alternatives were considered. They are described below.

ALTERNATIVE FORMULATION

Each alternative addresses development and management of the Lees Ferry developed area. Following the identification of issues, the interdisciplinary team developed a series of management options that favorably address each issue. The management options were then grouped to form various alternatives. Criteria used to define each alternative were based on the intent or management emphasis provided by that alternative.

ALTERNATIVE DESCRIPTIONS

ALTERNATIVE A (Minimum requirements/no action)

This alternative maintains current conditions except for improvements necessary for cultural resource preservation and public health and safety. The description that follows provides a base to determine the relative merits of each alternative.

Visitor Facilities

Visitor Contact - Primary visitor contact is continued in a 1,209 square foot concrete block ranger station which includes comfort station facilities, utility chase, large room for visitor contact, small storage room, first aid room, carport area, and 22 vehicle parking lot. Grand Canyon orientation activities are conducted in a 1,536 square foot double wide mobile home located north of Lees Ferry's maintenance facilities. This facility is also used as a sales outlet by the Grand Canyon Natural History Association.

Launch Ramp and Associated Facilities - The launch ramp area is comprised of a two lane concrete upriver launch ramp, gravel surfaced river runners launch ramp, comfort station, courtesy dock, river runners "throw down" camping area, 21 (18 single vehicles, 3 buses) vehicle parking lot, and 89 (49 single vehicles, 40 vehicles with trailers) vehicle long-term parking lot located approximately 1,000 feet west of the launch ramp area.

Campground - Overnight use is provided in the existing 56 site campground with shade structures, metal wind screens, picnic tables, barbeque grills, and two concrete block comfort stations.

Picnic Area - The picnic area consists of a 26 vehicle paved parking lot overlooking the confluence of the Paria and Colorado Rivers. A solar pit toilet serves picnickers/sunbathers on a day use basis. There are no picnic tables or grills.

Group Use/Environmental Education - Designated facilities or areas for these uses are not provided.

Trailer Dump Station - The existing facility, located along the National Park Service residential area access road, is maintained.

Circulation Patterns

Roads - Current vehicular circulation patterns are maintained with 7.4 miles of paved road and 0.8 miles of gravel surfaced roads in the Lees Ferry development zone.

Trails - Trails maintained within the developed area include the undeveloped Paria Canyon Trail, the natural surfaced Lees Crossing access trail, and the natural surfaced Navajo High Bridge trail.

Commercial Operations

Commercial operations are restricted to Grand Canyon river running operations and fishing guides and raft trips between the Glen Canyon Dam and Lees Ferry.

Interpretation

Current interpretive programs are maintained. These include: evening programs conducted at the amphitheater about 3 nights each week; guided interpretive walks

conducted 1 to 2 days each week within the Lonely Dell Ranch and Lees Ferry Historic Districts; launch ramp roving activities; and river boat checkout assistance. Interpretive developments include waysides along the entrance road and exhibits at the ranger station.

Cultural Resource Program

Cultural resource activities include stabilization of structures within the historic districts.

Administrative/Maintenance

Maintenance Area - Current maintenance facilities and their location are maintained. Existing facilities consist of a 11,520 square foot fenced maintenance yard, 480 square foot water treatment plant, 120 square foot maintenance shop, and 480 square foot storage shed. A 150,000 gallon water storage tower is located north of the ranger station.

Residential Area - Located south of the ranger station, this area presently includes three permanent concrete block houses and a single wide mobile home used for employee quarters. Currently, Glen Canyon and Grand Canyon personnel are stationed in this area.

Administrative Facilities - Glen Canyon administrative operations are conducted from the existing ranger station. Administrative operations for Grand Canyon raft trips are conducted in the visitor orientation mobile home.

Staffing Requirements - Current Glen Canyon National Recreation Area staffing levels include:

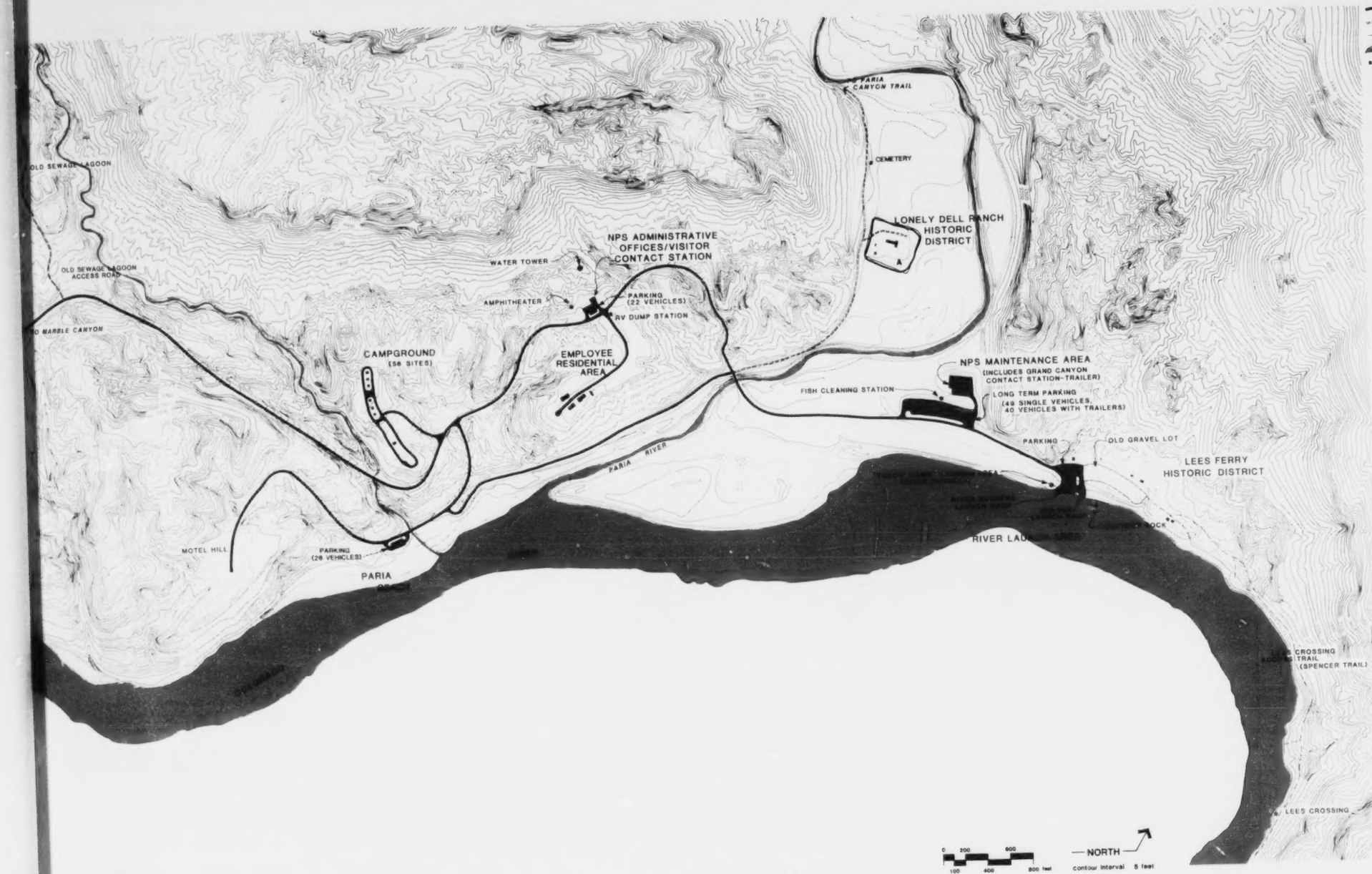
Permanent

Park Ranger	GS-09
Water Treatment Plant Operator	WG-09

Seasonal

Maintenance Worker	WG-05	0.6 W.Y.
Park Ranger	GS-05	0.5 W.Y.
Park Ranger	GS-04	0.4 W.Y.

Current Grand Canyon National Park staffing levels include:



LEGEND

- EXISTING PAVED ROAD
- EXISTING GRAVEL OR DIRT ROAD
- EXISTING TRAIL
- HISTORIC HIGH FLOW LEVEL
- EXISTING BUILDING, COMFORT STATION, HOUSE, SHED OR TRAILER

PROPOSED ACTIONS

A STABILIZE STRUCTURES WITHIN LONELY DELL RANCH AND LEES FERRY HISTORIC DISTRICTS

MAP III.1

ALTERNATIVE A

LEES FERRY

GLEN CANYON NATIONAL RECREATION AREA

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Permanent

Park Ranger	GS-07	

Seasonal

Park Ranger	GS-05	0.4 W.Y.

Utilities - Current utilities provided by the National Park Service include water, sewage, and trash removal. Electricity is provided commercially. Utility systems include:

- clear well water intake at the Colorado River
- water treatment plant
- 150,000 gallon water storage tower
- Lonely Dell Ranch irrigation system
- septic systems (two in campground, one at ranger station, two in residential area, one at maintenance area, two at launch ramps, and two at Lonely Dell Ranch)
- trash removal by Wahweap maintenance operation, hauled to the City of Page landfill.

A sewage system was constructed in 1971 to serve motel hill with a lift station and 3-cell sewage lagoon. When the concession operation was terminated by the concessioner, the sewage system became obsolete.

Cost Estimates - Gross construction cost estimate for implementation of this alternative is $40,000.

ALTERNATIVE B

This alternative includes provisions for improved visitor contact and interpretive services and a structured environmental education and group use area. Stabilization of the Lonely Dell Ranch and Lees Ferry Historic Districts structures is continued. A new 5,300 square foot visitor contact/administrative facility is constructed near the river launch ramps.

VISITOR FACILITIES

Visitor Contact - Provisions for visitor contact and Glen Canyon/Grand Canyon administrative operations are provided in a 5,300 square foot facility located near the river launch ramps. Included is parking for 40 single vehicles, 10 recreation vehicles, 6 buses, and 6 administrative parking stalls. The current Grand Canyon orientation

mobile home is removed from its site and the ranger station is converted to a group use facility.

Launch Ramp and Associated Facilities - These facilities are maintained in their current location. Partial reconstruction of the area is provided to segregate use of upriver and river runners launch ramps. Vehicular circulation patterns are defined to minimize user conflicts by construction of traffic control islands. Existing long-term launch ramp parking is expanded to increase capacity of 150 stalls. Delays in boat launching are minimal with construction of a boat ready area.

The "throw down" camping area, which serves river running operations, is maintained in its current location.

Campground facilities - The 56 site campground and associated support are rehabilitated to better serve todays larger recreation vehicles.

Picnic Area - The Paria Beach picnic area is maintained.

Group Use/Environmental Education - The current ranger station is converted to a facility to serve large groups with kitchen and dining operations. Other improvements include tent pads, campfire circle, and trail access to the amphitheaters.

Trailer Dump Station - This facility is maintained in its current location.

CIRCULATION PATTERNS

Roads - Current vehicular circulation patterns are modified by obliteration of the river front and motel hill roads. These roads are restored to a naturally appearing landscape. The Lonely Dell Ranch access road is paved and terminated by a 35 vehicle parking lot. Remaining roads within the developed area are maintained.

Trails - An interpretive trail, approximately .8 miles in length, is constructed to provide an interpretive link between Lonely Dell Ranch and Lees Fort. Remaining trails are maintained.

COMMERCIAL OPERATIONS

Commercial operations are restricted to Grand Canyon river runner activities, and fishing guides and raft trips between Glen Canyon Dam and Lees Ferry.

INTERPRETATION

Themes for interpretation encompass the Anasazi to present day river running operations. Interpretive exhibits are provided in the visitor/administrative facility. An interpretive trail with wayside exhibits provides pedestrian access between the Lonely Dell Ranch and Lees Ferry Historic Districts. A self guided tour is developed for Lees Fort and Lonely Dell Ranch. Evening interpretive programs are provided at the 200 seat amphitheater.

CULTURAL RESOURCES MANAGEMENT

Stabilization of the Lees Ferry and Lonely Dell Ranch structures are continued. Archeological site protection is provided through surveillance and public education interpretive programs.

ADMINISTRATIVE/MAINTENANCE

Maintenance Area - Maintenance facilities are expanded in their current location. Improvements include 1,200 square foot shop/warehouse, 1,000 square foot covered storage, 800 square foot firehouse, and gas and diesel fuel storage tanks.

Residential Area - These developments are maintained in their current location. In addition to the 3 single family permanent housing units there is a need for 2 duplex units and a 6 unit apartment to serve permanent and seasonal National Park Service personnel. The existing mobile home is removed from site.

Administrative Facilities - Administrative operations are conducted in the proposed visitor/administrative facility located near the river launch ramps. 1,400 square feet serve the administrative function.

Staffing Requirements - Implementation of this alternative requires the following staffing additions:

Permanent

Interpretation Park Ranger (2)	GS-07
Visitor Protection Park Ranger	GS-07

LEGEND

- EXISTING PAVED ROAD
- EXISTING GRAVEL OR DIRT ROAD
- EXISTING TRAIL
- HISTORIC HIGH FLOW LEVEL
- EXISTING BUILDING, COMFORT STATION, HOUSE, SHED OR TRAILER

PROPOSED ACTIONS

- **A** 5800 sq ft VISITOR CONTACT/ADMINISTRATIVE FACILITY, PARKING (56 VEHICLES)
- **B** MAINTAIN LAUNCH RAMP FACILITIES; CONSTRUCT TRAFFIC CONTROL ISLANDS
- **C** EXPAND LONG TERM PARKING TO 150 VEHICLES
- **D** BOAT READY AREA
- **E** CONVERT ADMINISTRATIVE OFFICES/VISITOR CONTACT STATION AND AREA TO GROUP USE/ENVIRONMENTAL EDUCATION FACILITY
- **F** OBLITERATE MOTEL HILL AND RIVER FRONT ROADS; RESTORE TO NATURAL APPEARING CONDITION
- **G** PAVE LONELY DELL RANCH ACCESS ROAD; CONSTRUCT 38 VEHICLE PARKING LOT
- **H** PROVIDE HISTORIC DISTRICT TRAIL WITH INTERPRETIVE EXHIBITS
- **I** STABILIZE STRUCTURES WITHIN LONELY DELL RANCH AND LEES FERRY HISTORIC DISTRICTS; DEVELOP SELF GUIDED TOURS
- **J** EXPAND MAINTENANCE FACILITIES, REMOVE GRAND CANYON CONTACT STATION (TRAILER)
- **K** CONSTRUCT 6 UNIT APARTMENT COMPLEX AND 2 DUPLEX UNITS; REMOVE MOBILE HOME; MAINTAIN REMAINING STRUCTURES
- **L** REHABILITATE CAMPGROUND

MAP III.2

ALTERNATIVE B

LEES FERRY

GLEN CANYON NATIONAL RECREATION AREA
UTAH - ARIZONA

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Maintenance		
Maintenance Worker	WG-08	
Administration		
Clerk Typist/Receptionist	GS-04	
Seasonal		
Interpretation		
Park Ranger	GS-05	1.8 W.Y.
Park Ranger	GS-04	0.2 W.Y.
Visitor Protection		
Park Ranger	GS-05	0.3 W.Y.
Maintenance		
Maintenance Worker	WG-05	0.9 W.Y.

Utilities - Under this alternative the existing water storage tank is retained. Utility improvements include:

- water distribution lines to the proposed visitor/administrative facility
- septic system for the visitor/administrative facility
- improved water distribution to the maintenance area
- improved septic system at the maintenance area
- additional septic systems at the residential area
- increased water distribution systems to the residential area

Cost Estimates - Gross construction cost estimate for implementation of this alternative is $3,814,000.

ALTERNATIVE C

This alternative provides for improved vehicular circulation patterns, segregation of downriver and upriver users, provisions for structured environmental education and group use, improved camping facilities, relocation of the maintenance area, continued stabilization of Lees Fort structures, and operation of Lonely Dell as a working ranch. Interpretive services are improved with a new visitor/administrative facility, interpretive trails, and expanded interpretive program.

Visitor Facilities

Visitor Contact - Provisions for visitor contact and Glen

Canyon/Grand Canyon administrative operations are provided in a 5,300 square foot facility located north of Paria Beach. Included is parking for 40 single vehicles, 10 recreation vehicles, 6 buses, and 6 administrative parking stalls. The existing Grand Canyon orientation mobile home is removed from its site.

Launch Ramp and Associated Facilities - Boat launching is provided in two separate locations. Launching for river running raft trips is provided near the proposed visitor/administrative facility located in close proximity to Paria Beach. Included is parking for 20 vehicles and a "throw down" camping to serve river running operations.

The upriver boat launch is maintained in its current location. Long-term parking capacities are expanded to 150 stalls. To help minimize delays in boat launching, a boat ready area is provided along the access road. The current gravel river runners launch ramp is restored to a natural appearing landscape.

Campground - Current campground capacity of 56 sites is maintained; however, the land base is expanded to alleviate congestion and enhance visitor experiences. A 200 seat amphitheater is located near the campground using rock faces of surrounding slopes as a backdrop.

Landscape management techniques are employed to reduce adverse visual impacts created by the campground. All facilities are painted with tones that repeat colors of the surrounding landscape. New or reconstructed facilities use a rough textured surface to reduce and confine reflection. When possible, trees and other vegetation are used to provide shade rather than manmade shade structures.

Picnic Area - A 10-15 site picnic area is constructed near Lees Fort to serve day use activities. Included are grills, picnic tables, and shade structures. The existing comfort station and 26 vehicle parking lot are used to serve this area.

Group Use/Environmental Education - Facilities to accommodate this use are constructed on "motel hill" overlooking Paria Beach. Included are camping loops, campfire area, and comfort station.

Trailer Dump Station - This facility is relocated near the campground to minimize visitor use in the National Park Service maintenance and residential areas.

Circulation Patterns

Roads - Improvement of vehicular circulation patterns are not part of this alternative because they have been previously identified. They are summarized as follows. The main park access road is relocated to provide views of the Colorado River thereby enhancing visitor experiences. Visitor use through the maintenance and residential areas is avoided. All new intersections use a "T" approach. Improvement of circulation patterns requires construction of .38 miles of road, reconstruction of .81 miles of road, obliteration of 1.5 miles of road, and construction of a new bridge to cross the Paria River. Access to the Lonely Dell Ranch is improved by paving .17 miles of existing gravel road terminated by a 35 vehicle parking lot.

Trails - Trail systems within the developed area are intended to provide a "link" of the Lonely Dell Ranch and Lees Ferry Historic Districts as well as access to outlying developed zones. An interpretive trail, approximately .8 miles in length, with exhibits and waysides to interpret history of the area connects Lonely Dell Ranch with Lees Fort.

The Paria Canyon Trail is marked. Trailhead information and registration boards are provided within the developed area. The old sewage lagoon access road is rehabilitated and converted to a route to provide pedestrian access to outlying dispersed zones and the Lees Ferry area.

The Navajo High Bridge trail is closed to public use. With consent of individual owners, the commemorative plaques are relocated to the proposed visitor and administrative facility.

Commercial Operations

In addition to the existing commercial operations provisions for limited commercial expansion are provided. They include relocation of the downriver launch ramp for Grand Canyon river runner trips and a small facility located near the proposed visitor/administrative facility with camp store operations and fast food services.

Interpretation

Themes for interpretation encompass the Anasazi to present day river running operations. Interpretive exhibits are

provided in the proposed visitor/administrative facility. The 200 seat amphitheater is constructed near the campground. An interpretive historic trail with wayside exhibits provides access between the Lonely Dell Ranch and Lees Ferry historic districts. Self-guided tours are developed around Lees Fort and the Lonely Dell Ranch is rehabilitated and operated as a working ranch.

Cultural Resource Management

Emphasis is towards the Lonely Dell Ranch and Lees Ferry Historic Districts. Structures at Lonely Dell Ranch are rehabilitated and operated as a working ranch. Archeological sites are protected through use of surveillance and interpretive programs to educate the public.

Administrative/Maintenance

Maintenance Area - Maintenance area facilities are relocated to the site of the existing ranger station; however, water treatment facilities are maintained in their current location. The present ranger station is expanded to 1,800 square feet for a shop/warehouse. Other needs at the maintenance area include 1,000 square foot covered storage, 800 square foot firehouse, and gas and diesel fuel storage tanks.

Residential Area - These developments are maintained in their current location. In addition to the three single family permanent housing units, there is a need for 2 duplex units and a six unit apartment to serve permanent and seasonal National Park Service personnel. The existing mobile home is removed from site.

Administrative Facilities - Administrative operations are conducted in the proposed visitor/administrative facility located near the river launch ramps. 1,400 square feet serve the administrative function.

Staffing Requirements - Implementation of this alternative requires the following staffing additions:

Permanents

Interpretation Park Ranger (2)	GS-07
Visitor Protection Park Ranger	GS-07

Maintenance		
Maintenance Worker	WG-08	
Administration		
Clerk Typist/Receptionist	GS-04	

Seasonal

Interpretation		
Park Ranger	GS-05	1.8 W.Y.
Park Ranger	GS-04	0.2 W.Y.
Visitor Protection		
Park Ranger	GS-05	0.3 W.Y.
Maintenance		
Maintenance Worker	WG-05	0.9 W.Y.

Utilities - Under this alternative the existing water storage tank is replaced with a ground level storage facility to reduce adverse visual impacts. Other utility improvements include:

- water distribution lines to the proposed visitor/administrative facility
- septic system for the visitor/administrative facility
- improved water distribution to the maintenance area
- improved septic system at the maintenance area
- additional septic systems at the residential area
- increased water distribution systems to the residential area
- septic system for the relocated trailer dump station

Cost Estimates - Gross construction cost estimate for implementation of this alternative is $5,360,000.

LEGEND

- EXISTING PAVED ROAD
- EXISTING GRAVEL OR DIRT ROAD
- EXISTING TRAIL
- HISTORIC HIGH FLOW LEVEL
- EXISTING BUILDINGS, COMFORT STATION, HOUSE, SHED OR TRAILER

PROPOSED ACTIONS

- **A** 9300 sq ft VISITOR CONTACT/ADMINISTRATIVE FACILITY, PARKING (54 VEHICLES)
- **B** RIVER RUNNERS LAUNCH RAMP, PARKING (20 VEHICLES) AND "THROW DOWN" CAMPING AREA
- **C** REMOVE EXISTING PARKING LOT, RESTORE TO NATURAL APPEARING CONDITION
- **D** MAINTAIN EXISTING PRIVATE LAUNCH RAMP AND PARKING LOT, RESTORE RIVER RUNNERS LAUNCH RAMP AND "THROW DOWN" CAMPING AREA TO NATURAL APPEARING CONDITION
- **E** BOAT READY AREA
- **F** CONSTRUCT NEW CAMPGROUND LOOP (WHICH CAN ACCOMMODATE GROUP CAMPS), MAINTAIN CURRENT OVERALL CAPACITY OF 56 SITES
- **G** REDUCE CAPACITY OF EXISTING CAMPGROUND BY APPROXIMATELY 25%, REDUCE ADVERSE VISUAL IMPACTS BY USE OF LANDSCAPE MANAGEMENT TECHNIQUES
- **H** PICNIC AREA (10-15 SITES)
- **I** DEVELOP GROUP USE/ENVIRONMENTAL EDUCATION FACILITIES
- **J** RELOCATE RV DUMP STATION
- **K** REMOVE ROAD SECTIONS, RESTORE TO NATURAL APPEARING CONDITION
- **L** CONSTRUCT NEW ACCESS ROAD
- **M** CREATE T-ANGLED INTERSECTIONS
- **N** CONSTRUCT NEW BRIDGE AND ROADWAY SECTION
- **O** PAVE LONELY DELL RANCH ACCESS ROAD, CONSTRUCT 315 VEHICLE PARKING LOT
- **P** PROVIDE HISTORIC DISTRICT TRAIL WITH INTERPRETIVE EXHIBITS
- **Q** MARK PARIA CANYON TRAIL, PROVIDE TRAILHEAD INFORMATION AND REGISTRATION BOARDS
- **R** REHABILITATE OLD SEWAGE LAGOON ACCESS ROAD, CONVERT TO PEDESTRIAN TRAIL ACCESS ROUTE
- **S** CONSTRUCT FACILITY FOR CAMP STORE OPERATIONS AND FAST FOOD SERVICES
- **T** RELOCATE 200 SEAT AMPHITHEATER
- **U** RESTORE LONELY DELL RANCH FACILITIES AND OPERATE AS WORKING RANCH
- **V** STABILIZE STRUCTURES WITHIN LEES FERRY HISTORIC DISTRICT, DEVELOP SELF GUIDED TOUR
- **W** RELOCATE MAINTENANCE AREA FACILITIES, MAINTAIN WATER TREATMENT FACILITIES IN CURRENT LOCATION
- **X** CONSTRUCT 6 UNIT APARTMENT COMPLEX AND 2 DUPLEX UNITS, REMOVE MOBILE HOMES, MAINTAIN REMAINING STRUCTURES
- **Y** REPLACE EXISTING WATER TOWER WITH GROUND LEVEL WATER STORAGE TANK
- **Z** RECONSTRUCT RIVER FRONT ROAD

MAP III.3

ALTERNATIVE C

LEES FERRY

GLEN CANYON NATIONAL RECREATION AREA

UTAH - ARIZONA

UNITED STATES DEPARTMENT OF THE INTERIOR - NATIONAL PARK SERVICE

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SUMMARY COMPARISON OF ALTERNATIVES

ELEMENT	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	NPS PROPOSAL
VISITOR CONTACT	Continued in 1,209 sq. ft. ranger station. Grand Canyon River orientation in existing mobile home.	5,300 sq. ft. visitor /administrative facility near launch ramps with 56 public parking stalls.	5,300 sq. ft. facility near Paria Beach with 56 public parking stalls.	Same as "B"
LAUNCH RAMP	Maintain concrete upriver ramp and gravel surfaced river runners ramp. Ramp parking capacity - 21. Long-term parking capacity - 89.	Partial reconstruction to define vehicular circulation patterns. Ramp parking with visitor/administrative facility. Long-term parking capacity - 150.	River runners launch ramp relocated to Paria Beach with 20 stall parking, old launch ramp removed. Upriver launch ramp maintained, long-term parking capacity - 150.	Same as "B"
CAMPGROUND	Maintain 56 sites.	Same as "A"	Campground area expanded, but capacity maintained at 56 sites. 200 seat amphitheater relocated.	Campground area expanded, but 56 site capacity maintained. Includes loop for group use and provisions for reservations. Also, includes tables, grills, fire pits, barbeque grills, and shade trees. 200 seat amphitheater relocated.
PICNIC AREA	Paria Beach facilities maintained.	Same as "A"	Relocated near Lees Fort with public tables, grills, shade trees.	Current Paria Beach facilities maintained. Improvements include picnic tables, grills, and shade trees for 10-15 picnic sites.
GROUP USE/ ENVIRONMENTAL EDUCATION	No facilities provided for this use.	Ranger station and surrounding area converted to serve groups. Includes tent pads and group campfire circle.	Located on Motel Hill with camping loops, campfire circle, and comfort station.	Provided in new campground loop with provision to close to general public use when reserved for groups.
TRAILER DUMP STATION	Existing location maintained.	Same as "A"	Relocated near campground.	Same as "C"
ROADS	Current patterns maintained.	Remove riverfront and motel hill roads. Lonely Dell Ranch access road paved and terminated by 30-35 vehicle parking lot.	Main park road relocated to riverfront area, portions of old road removed. Lonely Dell Ranch access road paved and terminated by 30-35 vehicle parking lot.	Same as "C"
TRAILS	Existing trails maintained.	Interpretive trail between Lonelly Dell Ranch and Lees Fort provided. Remaining trails maintained.	Interpretive trail between Lonely Dell Ranch and Lees Fort provided. Paria Canyon Trail marked and trailhead provided. Navajo High Bridge trail closed to public use.	Same as "C" plus the following: Lees Crossing access trail reconstructed for use by disabled and elderly.
COMMERCIAL OPERATIONS	Restricted to Grand Canyon River running operations and upriver fishing guides and raft trips between Lees Ferry and Glen Canyon Dam.	Same as "A"	Grand Canyon River running operations. Small camp store and fast food operation.	Same as "A"

SUMMARY COMPARISON OF ALTERNATIVES

ELEMENT	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	NPS PROPOSAL
INTERPRETATION	Current programs maintained; amphitheater presentations, historic district interpretive walks, launch ramp roving.	Themes encompass Anasazi to present day river running operations. Exhibits provided in visitor/administrative facility. Amphitheater programs guided and unguided trail tours.	Same as "B"	Same as "B"
CULTURAL RESOURCES	Continue structure stabilization, surveillance of archeological sites.	Same as "A"	Continue stabilization of Lees Fort structures. Lonely Dell Ranch rehabilitated and operated as a working ranch.	Same as "C"
MAINTENANCE	Maintain current facilities; 480 sq. ft. water treatment plant, 120 sq. ft. maintenance shop, 480 sq. ft. storage shed.	Expand in current location with 1,800 sq. ft. shop/warehouse, 1,000 sq. ft. covered storage, 800 sq. ft. firehouse, fuel storage tanks.	Relocate to site of existing ranger station. Expand ranger station to 1,800 sq. ft. Additional improvements include 1,000 sq. ft. covered storage, 800 sq. ft. fire house, and fuel storage tanks.	Same as "C"
RESIDENTIAL	Maintain current facilities; 3 permanent residences, 1 mobile home.	Expand with 2 duplex units and 6 unit apartment. Remove mobile home.	Same as "B"	Same as "B"
ADMINISTRATIVE	GLCA functions in Ranger Station, GRCA functions in orientation mobile home.	GLCA and GRCA functions in visitor/administrative facility (1,400 sq. ft.)	Same as "B" located near Paria Beach.	Same as "B"
STAFFING	4.9 FTE's	11.7 FTE's	Same as "B"	Same as "B"
UTILITIES	Maintain current systems; well water intake, water treatment plant, 150,000 gallon water storage tower, Lonely Dell Ranch irrigation system, septic systems.	Improve water distribution system with 6" lines. 3 additional septic systems.	Improve water distribution system with 6" lines. 4 additional septic systems. Replace water storage tower with 150,000 gallon ground level storage tank.	Improve water distribution system with 6" lines. 3 additional septic systems. Replace water storage tower with 150,000 gallon ground level storage tank
CONSTRUCTION COST ESTIMATE (gross)	$40,000	$3,814,000	$5,360,000	$4,744,000

CHAPTER IV

AFFECTED ENVIRONMENT

INTRODUCTION

This chapter summarizes the current physical and biological characteristics of the Lees Ferry area. It also summarizes visitor use data as well as local and regional land uses and facilities. This chapter describes those aspects of the environment likely to be affected by either the proposed action or the alternatives to the proposed action including the areas of major concern identified by the public. Broad discussions of the affected environment are included in the 1979 General Management Plan/Final Environmental Statement for the Glen Canyon National Recreation Area.

NATURAL RESOURCES

Geology - Soil

The Lees Ferry developed area is situated on alluvial plains created by the deposition of materials and the geologic formation created by the confluence of the Colorado and Paria Rivers. It is a relatively open stretch of about two miles and separates Glen Canyon from Marble Canyon. Although it is an open area, it is far from level. It is surrounded on all sides of the Colorado and Paria Rivers by towering cliffs, rocky pinnacles, deep gulches, and rough mesas. It is a green oasis in the midst of the harsh, arid high desert country. The rocks of the area belong to the Permian, Triassic, and Jurassic periods. Red sandstones and shales are the predominate element with thinner layers of limestone, conglomerate, and gypsum. Navajo sandstone, Kayenta sandstone, Moenave sandstone, Chinle formation, and Moenkopi shale are all visible at Lees Ferry. Kaibab limestone first appears at river level along the Colorado River near its confluence with the Paria River. Navajo sandstone predominates in the gorge of Glen Canyon forming spectacular red cliffs and walls. The red sandstone colors the towering cliffs which vary from red to purple and almost black where water trickles down the faces. Great masses of rock have fallen from the cliff faces forming over-arching amphitheatres which are a conspicuous feature of the area.

Many of the soils on the talus and other slopes are composed of residual materials from the exposed rock and

possess relatively little organic matter. The flat lands along the rivers have been formed by depositions of the silt laden water of the rivers. These alluvial soils are fertile and currently support a lush riparian community. All soil types found in the area are highly erosive.

Vegetation

The Cottonwood-Willow-Saltcedar floodplain (Hayward et al. 1958) occurs over many miles of canyon bottom throughout Glen Canyon National Recreation Area. This is the association most likely to be affected by development at Lees Ferry.

The dominant species of this riparian association are Sandbar Willow, Gooding Willow, Baccharis, Saltcedar, and Arrowweed. In addition to the major species, many minor species mix with them. On narrow terraces, or where steep hillsides closely approach the river banks, Gamble Oak and Hackberry extend to and sometimes become a part of this community. More rarely the large Fremont Cottonwood may also be found.

Smaller shrubs, herbs, and grasses are more sporadic members of this community and may occur scattered or in locally dense stands in open spaces where the continuity of the dominant shrubs and trees is broken. Most frequent among these smaller members are Saltgrass and Slender Dropseed, both of which may form small meadow-like stands in open spaces. A wild rose and two species of squawbush also occur occasionally in this community along with plants from the drier parts of the terraces. Mosses and liverwarts are frequently found on damp sand or clay, or where water washes over bare rock surfaces. The upland benches support a desert shrub community with Blackbrush as the dominant species.

Pediocactus braydi, an endangered species of cactus can be found in the area. This species is limited to a particular type of soil. Its zone extends from Lees Ferry south into Grand Canyon National Park and onto adjacent BLM lands. The U.S. Fish and Wildlife Service estimates that the habitat includes only about 20 sq. kilometers.

Hydrology

The Colorado River historically had annual floods of 80,000 to 100,000 cu.ft./sec. with occasional years in

excess of 200,000 cu.ft./sec. when excessive runoff occurred. The Colorado River, which is now regulated by Glen Canyon Dam, has an average stream flow of 11,000 cubic feet per second and ranges from 1,500 to 30,000 cubic feet per second at Lees Ferry. In 1983 a record 93,000 cu.ft./sec. was released from the Glen Canyon Dam. Normal releases can be expected to average around 40,000 cu.ft./sec. during the spring runoff. Water temperatures here range between 45 and 50 degrees F. The Paria River, which flows into the Colorado from the north, generally flows a few inches deep except during the spring runoff or summer thunderstorms which can cause flash flooding.

The Lees Ferry developed area currently gets its water from the Colorado River. The Lonely Dell Ranch has an acquired water right to Paria River water which historically has been used to support farming and orchard operations.

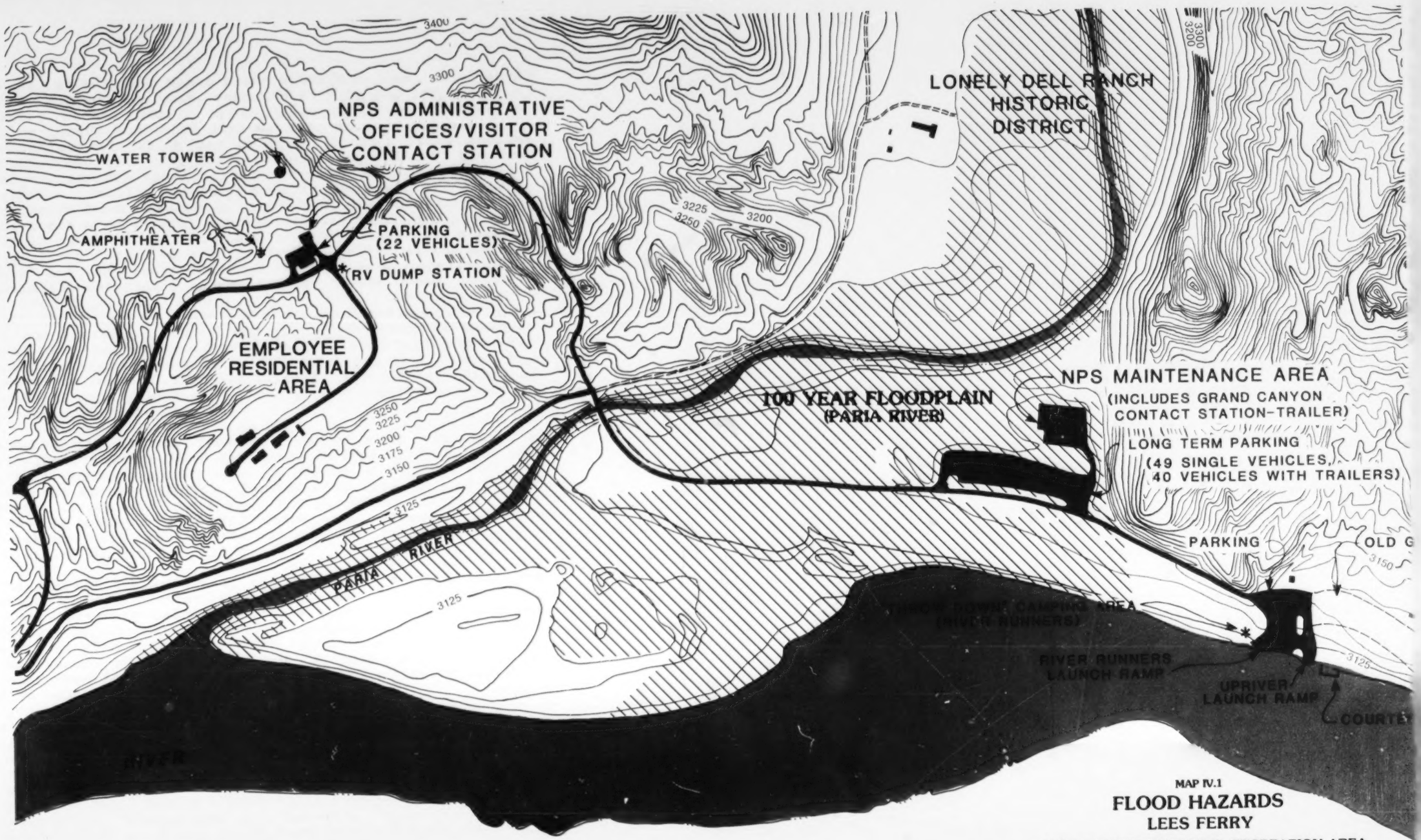
Map IV.1, the flood hazard map, illustrates flooding hazards at Lees Ferry. The sparse cover of vegetation permits the water from storms to runoff quickly, and as a result, flash floods may occur.

Air

Lees Ferry lies within the Four Corners Air Quality Control Region. The area has little industry and a relatively low population with a small amount of vehicular use. Analysis of air quality data concludes that the air quality of the Glen Canyon National Recreation Area is excellent, especially in comparison with the air in cities. Air quality excellence decreases near local air pollution sources such as automobiles, motorboats, and the coal-fired Navajo Generating Station. Lees Ferry is located within a Class II airshed. Occasional regional decreases in air quality occur during periods when concentrated air masses move in from the west.

Wildlife and Fish

The riparian and adjacent upland communities at Lees Ferry, because of the plentiful cover, large variety of available food and proximity to water, provides suitable habitat to a relatively large variety of wildlife. Snakes and amphibians found in the area include Black-tailed rattlesnake, Grand Canyon rattlesnake, Great Basin rattlesnake, western ground snake, gopher snake, garter



MAP IV.1

FLOOD HAZARDS

LEES FERRY

GLEN CANYON NATIONAL RECREATION AREA

UTAH - ARIZONA

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snake, milk snake, Great Basin spadefoot toad, red-spotted toad, Woodhouse's toad, common tree frog and leopard frog, desert banded gecko, Upper Colorado River chuckwalla, spiny lizard, collared lizard, and lesser earless lizard. Larger animals which may be found at Lees Ferry include coyote, red fox, gray fox, kit fox, ringtail cat, raccoon, badger, western spotted skunk, striped skunk, bobcat, and beaver. Small mammals include white-tailed antelope squirel, desert kangaroo rat, and cottontail rabbits. There are also several species of bats which are plentiful within the area. There are a great number of birds at Lees Ferry including such predatory species as the sparrow hawk and the redtailed hawk and a large population of wintering waterfowl, especially the Canada Goose.

Both the peregrine falcon and the bald eagle can be found in the Lees Ferry area. The peregrine falcon is known to nest in the nearby cliffs, while the bald eagle can occasionally be seen as a wintering resident. Both are listed by the U.S. Fish and Wildlife Service as endangered species. The golden eagle is a year round resident and is known to nest in the area.

Because of abundant food and escape cover, the area is excellent Bighorn Sheep habitat. In 1984 Arizona Game and Fish Department established two herds of bighorn sheep in the Lees Ferry vicinity. Twenty sheep were planted in the Paria Canyon and at Fisher Spring, which is above the existing housing area and campground. These herds are becoming well established along the Paria River and Vermilion Cliffs.

The Paria River is one of the few desert river systems in which aquatic habitat alteration has not occurred. The river currently maintains viable populations of speckled dace, flannelmouth suckers, blue-head mountain suckers, and razorback suckers. The last two are listed as threatened by the State of Arizona and are being considered for threatened or endangered status by the U.S. Fish and Wildlife Service.

Since the closing of the flood gates of Glen Canyon Dam in 1963, characteristics of the Colorado River have changed dramatically. The sediment laden cold in winter to warm in summer river water has been replaced with a very clear, perpetually cold (45 to 50 degree F ; 7 to 10 degree C) water. The native fish which depended upon the temperature fluctuation for breeding have disappeared. Rainbow and cutthroat trout have been stocked since the early 1970's. The fishing at Lees Ferry has developed

into a major trophy rainbow trout fishery. The Arizona Game and Fish Department plan to maintain an active stocking program.

CULTURAL RESOURCES

Archeological

Glen Canyon National Recreation Area's cultural resources have remained relatively unknown. The desert barrier, which made the canyon "the place no one knew," provided protection from "pot hunters." About 30 miles downstream from Lees Ferry, in Marble Canyon, several split willow twig figurines have been found. Radiocarbon dating has placed their age at 4,000 years old. No other material has been found which identifies their makers. It is believed that the makers of these figurines belonged to what is known as the Desert Culture.

By the dawn of the Christian era another group of indians was living on the mesas near Lees Ferry. These peoples were the Basketmakers, who eventually learned to make pottery and became known as the Pueblos. These people are generally referred to as the Anasazi. They did not depend exclusively on hunting and food gathering, but developed cultivated crops such as corn, squash and beans. From the physical evidence, it appears that the Anasazi population was sparse in the early stages of habitation and then expanded dramatically beginning about 1000 A.D. They built many stone and adobe structures, some as cliff dwellings within the canyons, but most on the high rimlands. These structures served as dwellings, storage bins, and ceremonial rooms.

Although water and farm lands were available and plentiful at Lees Ferry, the physical evidence of Anasazi occupation so far uncovered indicates that occupation within the immediate vicinity was light. Two small ruins were located near the mouth of the Paria River which dated from 1100 to 1150 A.D. There are numerous petroglyphs on the canyon walls between the Glen Canyon Dam and Lees Ferry as well as up the Paria Canyon, within 3 miles of the mouth of the Paria River.

Although prehistoric ruins at Lees Ferry are scarce, there are many ruins on the Paria Plateau immediately to the west. It is projected that the density of the ruins found may be as great as ten sites per square mile. Near the end of the thirteenth century the Anasazi abandoned the canyon country and moved to the south. About a hundred

years later the Southern Paiute, close relatives of the Utes began moving into the Glen Canyon National Recreation Area. These were the Southern Paiute, close relatives of the Utes. Evidence shows that by that time there were some Paiutes in the Lees Ferry area.

There are no archeological sites currently listed on the National Register of Historic Places. The eligibility of archeological sites is presently unknown.

Historical

The first written record of white men to see Lees Ferry was the diary of the Dominguez - Escalante expedition in 1776. Two Franciscan priests, Fray Francisco Atanasio Dominguez and Fray Silvestre Velez de Escalante, set out from the Spanish settlement of Santa Fe in late July 1776 to find a northern trail to Monterey in California. Leaving Santa Fe the group traveled northwest into what is now Colorado, then went north and finally turning west into what is now Utah. At Utah Lake they turned south to reach the latitude of Monterey. In the vicinity of the present day Cedar City, they were struck by an early winter storm. As they were still hundreds of miles from California, the decision was made to return to Santa Fe. They chose to return by a more direct, but unexplored, route. They traveled south beyond the Virgin River and finally turned east across the present Arizona Strip. Their journey was guided by vague information and stories of a crossing of the Colorado River. They reached Lees Ferry in October 1776 and realized that it was not the river ford they were searching for, and worse, that it might be a giant cul-de-sac with no way out. The group spent several days at Lees Ferry in futile attempts to cross the Colorado River. Finally the group moved up the Paria Canyon and found a route over the Echo Cliffs, eventually crossing the Colorado River about 45 miles north of Lees Ferry at what is now called The Crossing of the Fathers.

The next recorded history of Lees Ferry was by the Mormon church. After 1847 the Mormon Church began expansion of their frontiers outward from Salt Lake City. Brigham Young, President of the church, set up a program of vigorous expansion towards the south and west. It was felt that it was important to settle in warmer climates and have an ice free route to California. The next eleven years saw the settlement of numerous towns as far south as St. George and Kanab. These became the hubs for further expansion into Nevada and Arizona. In the Book of Mormon

the Indians are called "Lamanites", peoples who have fallen from the faith in the ancient past. Missionary work was therefore one of the first efforts in a new area to bring the indians back into the faith. This would not only save souls, but would make it safe for the settlers coming into the area. In 1858 the church sent Jacob Hamblin, a well known Indian missionary, to make contact with the Hopi Indians and try to convert them. The Hopi, living southeast of the Colorado River in towns, were farmers and peaceful. Hamblin and a group of 12 men set out with an Indian guide who claimed to know where the ford across the Colorado River was. They ended up at Lees Ferry and had to go up the Paria Canyon to the pass which was discovered and used by the Dominguez expedition almost a hundred years earlier. Hamblin was unsuccessful with trying to convert the Hopi and returned to Utah after a few days visit at their village. A year later Brigham Young ordered another missionary attempt, again sending Hamblin. Following the same route as the previous year, the group reached Lees Ferry where they camped near the mouth of the Paria River. One of the party wrote in his diary that the area could be used for farming as there was plenty of water for irrigation. During this second mission, the Hopis were noticeably less friendly. Two of the men stayed through the winter, but the Hopi would not provide any food or shelter. Undaunted, Hamblin decided on a third trip the following year and brought along enough food and essentials to last a year. Hamblin realized that if his men and their baggage could ford the Colorado River at the mouth of the Paria River, they could save a great deal of time and effort. Therefore, the party started out with a 16 foot boat loaded on a wagon. However, the trail became too rough, and the boat and wagon had to be abandoned. When they reached the mouth of the Paria River, a crude raft was constructed; a few men barely made the crossing and a horse was drowned. Hamblin decided it was too dangerous and the group continued on to the "Crossing of the Fathers". On this trip the Mormons had their first encounter with the Navajo Indians. Accosted by a band of Navajo, Hamblin had to give up some of the trade goods intended for the Hopi. One of the group was separated from the party and shot by the Indians. Hamblin gave up hope of reaching the Hopi and turned the group around and returned to Utah. This was the first clash between the Mormon Church and the Navajo Indians.

In 1860 the Navajo Indians were practically at war with the United States Army because of the numerous raids made on New Mexico settlements. To escape the army raids, many

of the more warlike Navajo were moving into the canyon country. The Navajo surrendered in 1864 and were rounded up and sent to New Mexico to a "camp". Many Navajo escaped the roundup and fled to the remote canyons of the north and joined those who had already settled there. These Navajo began making raids into Utah driving off hundreds of cattle, horses, and mules. In 1864 the Mormon Church called on Jacob Hamblin to reach the Navajo and warn them to stop their raids into Utah. Hamblin went by way of Lees Ferry in the spring of 1864 and again in the fall of the same year. Both trips failed to uncover any Navajo Indians. However, the raids continued. In October of 1869 Hamblin again made a trip to locate the Navajo. This time his men built sturdy rafts and made the crossing safely. Thus began the ferry operation at Lees Ferry. At the time it was called the "Pahreah Crossing". That same month Hamblin posted guards at the Lees Ferry crossing to watch for marauding Navajos. The guards built a small stone building here and named it Fort Meeks. It was probably located near the site of the Dominguez campsite almost a hundred years earlier. It was in August of this same year that Major John Powell made camp at Lees Ferry. It was the first trip through the Glen and Grand Canyons by boat. The following year Powell returned to the area to plan a more extensive second voyage. He met with Brigham Young in Salt Lake City to get the backing and cooperation of the Mormon Church. Brigham Young agreed to cooperate and offered to explore part of the canyon country with Powell and an expedition was set up for September 1870. Powell and Young were joined by a group of about forty other Mormons. Among the group was John D. Lee, an important figure in the Mormon Church, and the man for whom Lees Ferry received its name. John D. Lee was one of the leading colonizers of southern Utah and helped establish the towns of Parowan and Harmony and later pioneered in Utah's "Dixie" area.

In 1847 and 1848 thousands of Mormons moved west from Missouri and Illinois to escape religious persecution. They settled in Utah and carved out numerous prosperous communities, but could never escape the persecution. As a result, relations with the Federal Government deteriorated.

In 1857 the Federal Government sent a force of 2500 men to depose Brigham Young as Territorial Governor and to enforce Federal authority. As this army approached, the Mormons were preparing for war. Emotions were running high. In late summer of that year a wagon train of emigrants arrived in Salt Lake City. There were about 140

men, women, and children in the group, headed for California. The wagon train encountered problems as they traveled south from Salt Lake City. The Mormons refused to sell them provisions and the emigrants retaliated with abusive language. The Mormons accused the emigrants of turning their cattle into the cultivated fields and intentionally fouling water sources. As tensions mounted, the emigrants seemed to symbolize all of the injustices the Mormons had suffered. The Paiute Indians and the Mormons had entered into a pact to become allies in the event that war broke out with the Federal Government. Seeing the animosity between the Mormons and the emigrants, the Indians wanted to attack the wagon train. The wagon train camped for several days in an area called Mountain Meadows before starting across the desert. The Mormon leaders in Cedar City, about 20 miles east of Mountain Meadows, decided that the emigrants would not be allowed to escape and directed the Paiute Indians to attack the train. John D. Lee was told by the Mormon Church stake president to "manage" the Indians. Although Lee objected, he felt he could not refuse as the stake president was not only his religeous superior, he was also Lee's military superior in the Mormon militia. The Indians, given approval by the Mormon Church, attacked the wagon train but were driven back. However, they kept the wagon train under siege. When Lee arrived on the scene, the Indians said that if the Mormons did not assist them in another attack, they might make war on the Mormons themselves. On or about September 11, 1857, about 50 Mormon men, under the leadership of Lee, convinced the emigrants that they could safely lead them through the Indians if they would lay down their arms and give their cattle to the indians.--The emigrants agreed and were escorted out by the Mormons who turned on them and killed all but the youngest children. This incident became known as the Mountain Meadow Massacre. It was not until May of 1859 that rumors of the massacre prompted a U.S. Army detachment to investigate. The site was visited and the atrocity was confirmed. A year later, after a hearing on the matter in Parowan, a report was issued which stated, "It is reported that John D. Lee and a few other white men were on the ground during a portion of the combat." From this initial accusation, charges of his involvement grew until he was the scapegoat for the incident. In late 1870 the Mormon Church was forced to excommunicate Lee for his part in the massacre. This was just after his trip to the upper Paria with Brigham Young and John Powell. He was sent an anonymous letter saying, "Trust no one. Make yourself scarce and keep out of the way." In the fall of 1871 Lee was sent by the church to the mouth of the Paria

to establish a ferry crossing of the Colorado River. Traveling down the Paria Canyon with one of his sons, two other men and seventy-five head of cattle, Lee reached the Colorado River on December 12. He then had to travel to the Kanab area to get one of his wives, Emma, and bring her back to Lees Ferry. He reached Lees Ferry with Emma the day after Christmas. Emma's first comment was, "Oh, what a lonely dell." Lee was moved by this and decided that he would call the farm Lonely Dell. Lee and some of his sons built several wood and stone structures at Lonely Dell, some of which stand today. In the fall of 1872 the Mormon Church sent lumber and a crew of Mormons to Lees Ferry to build a real ferryboat. The boat was completed and launched on January 11, 1873. By this time the church had decided that the Arizona territory was ready for Mormon settlement and the call went out from the church to settle Arizona. Thus, the ferry became a vital link between Utah and Arizona and the Mormon traffic between the two. In 1874 the Mormon Church ordered the construction of a trading post built at Lees Ferry. The purpose of this structure was to provide a place for the Navajo Indians to trade with the Mormons and at the same time keep them out of the Utah settlements to the north. It was built to also provide fortification in the event of an indian attack. Lee was gone from Lees Ferry a great deal of the time, much of it spent at Moenave where he had set up a small ranch. He was still a wanted man and spent most of his time in hiding. Emma had to carry on alone at Lees Ferry much of the time. On November 7, 1874, Lee was finally captured at Panguitch while visiting one of his wives. Lee went on trial in July 1875, but the jury could not reach a verdict and a second trial was held in September 1876. At the second trial Lee was convicted. On March 23, 1877, Lee was executed at Mountain Meadows. Emma Lee continued to live at Lees Ferry until May 1879, when the Mormon Church bought the ferry rights from her for $3,000.

In October 1873 the Mormon Church sent Warren Johnson to Lees Ferry to help run the ferry as Lee had to spend so much of his time in hiding. He took over the operation of Lees Ferry after Emma Lee left in 1879. Johnson lived at Lees Ferry with his two wives and children until 1896 when he moved to Wyoming. The church replaced Johnson with a man named James Emett. Emett made many improvements to the ferry operation as well as the road serving the ferry.

Lees Ferry had been a vital link between the Mormon settlements in Arizona and Utah. By 1900 the expansion of the railroads eliminated the need for the Lees Ferry as

most of the travel was done by train. Although the distance by train was much longer, the time required was much less than the historic wagon road. By 1909 use of the Lees Ferry was almost entirely local in nature. The Mormon Church decided that it no longer needed the ferry and sold it to the Grand Canyon Cattle Company. In June 1910, Coconino County bought the ferry from the Grand Canyon Cattle Company. The ferry operation continued for the next 18 years. The State of Arizona began construction of a steel arch bridge across the Colorado River at Marble Canyon in June 1927. On June 7, 1928, an accident occurred in which three men were drowned while trying to cross the river on the ferry. The ferry was swept downstream into Marble Canyon and lost. The ferry was never rebuilt as the bridge was completed in January 1929. The completion of the bridge ended the need for ferry service at Lees Ferry.

On July 1, 1889, three boats carrying 16 men appeared at Lees Ferry. The party had boated down the Colorado River through Glen Canyon. The group was surveying for a railroad route from Grand Junction, Colorado to the lower Colorado River and then a route across southern California to San Diego. Leading this party was Robert B. Stanton, a civil engineer who was convinced that a "water level" route was possible and feasible. After two accidents in which three men died, Stanton abandoned his trip. Stanton, by this time, was completely sold on the idea of a watergrade railroad through the canyons. He convinced a group of New York financiers to back a second expedition. This second expedition started out from North Wash at the head of Glen Canyon on December 10, 1889. They reached Lees Ferry on December 23 and stayed to spend Christmas. Stanton completed this trip as well as the initial survey of the railroad route, but was unable to find any backers for the millions of dollars it would cost to construct this railroad.

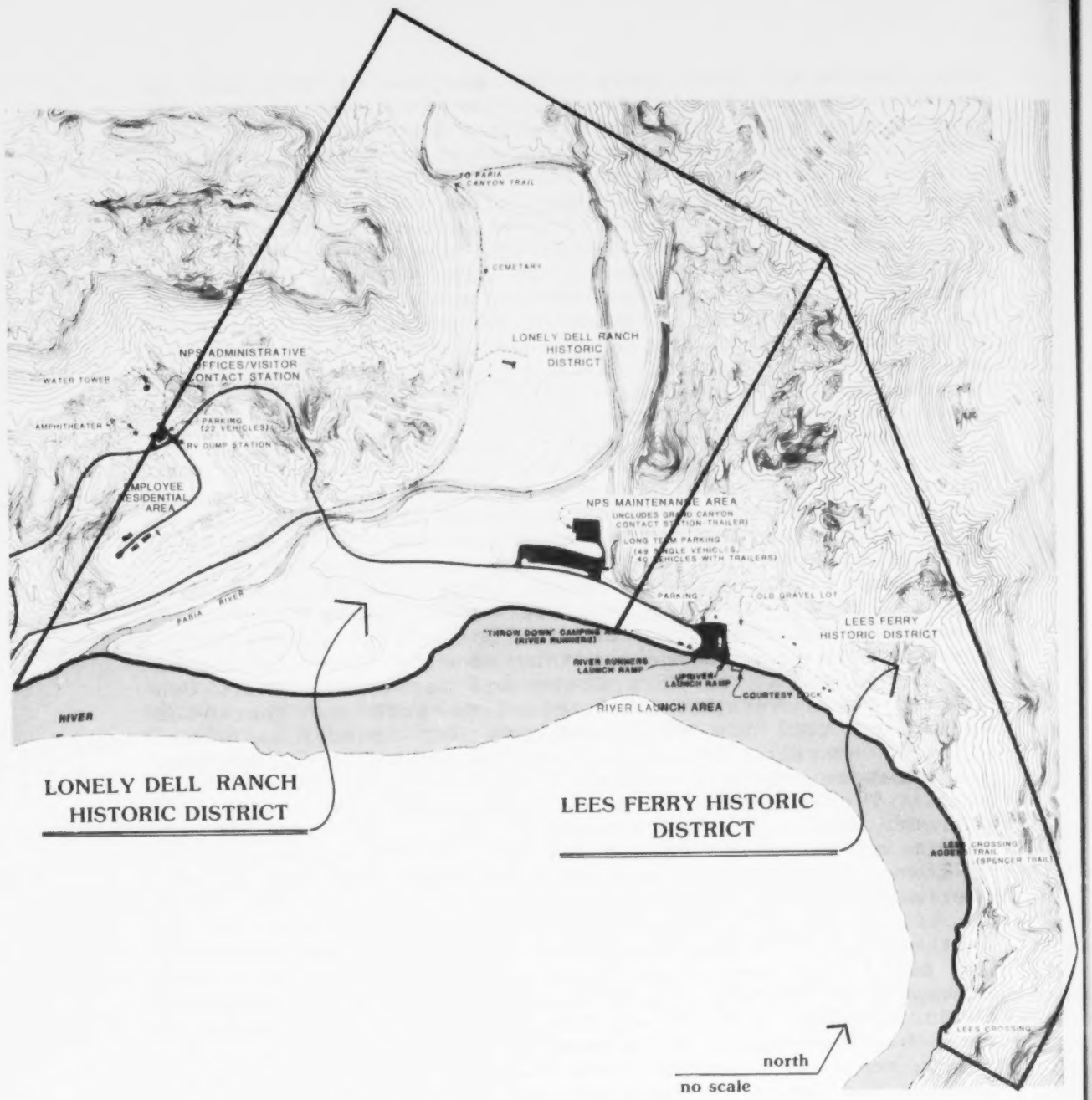
While in Glen Canyon, Stanton had noticed fine gold particles in the sand of the river bed. When he was unable to get backing for his railroad idea, he decided to set up a placer operation for the extraction of the gold. He boated up and down Glen Canyon staking for his placer operations and even constructed a short stretch of road above the Lees Ferry. This operation was a failure. There was gold present, but it could not be extracted because it was so fine.

Eight years later, Charles H. Spencer and his men set up a crusher and amalgamator on the San Juan River, about 125

miles north of Lees Ferry. The purpose of this was to remove the gold from the rock. They were attempting to extract the gold from the Wingate formation. After much testing, it was decided that there was as much if not more gold in the Chinle formation, just below the Wingate formation and that the Chinle formation was much softer and could be easily loosened with water. As the Chinle formation is exposed at Lees Ferry, it was decided to move the operation to the Lees Ferry area. There was also a source of coal located just to the north in Warm Creek. A boiler and pumps were installed to provide high pressure water to sluice the shale. The next step in his operation was to provide the coal to fuel the boilers. Spencer had his men build the "Spencer Trail" to the canyon rim about 1500 feet above the mining operation site at Lees Ferry. The idea of this trail was to have mules haul coal to operate the boilers. The trail never was used to haul coal. Finally, a steamboat constructed in San Francisco was dismantled and hauled to the mouth of Warm Creek where it was reassembeld. The steamboat was christened the Charles H. Spencer. The boat made it to Lees Ferry with no mishap. However, the return trip to Warm Creek took almost all of the coal the boat could haul, leaving no coal for the operation of the boilers at Lees Ferry. Spencer then had a barge constructed which could be hauled by the steamboat to Warm Creek and let float on its own down to Lees Ferry. This seemed to work and there was sufficient coal for the operation. But Spencer was never able to extract the gold from the Chinle. The mercury amalgamators quickly clogged and would not absorb the gold. The operation was abandoned and the Charles H. Spencer left tied to the river bank. In 1915, flood levels of the river caused the boat to become snagged on driftwood. As the river level subsided, the boat tipped over and sank.

In the mid 1930's Leo Weaver and his wife bought the ranch and built the long stone house which still stands. They attempted to operate a dude ranch. They sold the property to Gus Griffin in 1937. It was later bought by a group of people. The wooden frame portion of the ranch house was built sometime in the 1950's. Sometime in the early 1960's the existing orchard was planted. The National Park Service acquired the property in 1973 and it became a part of the Glen Canyon National Recreation Area.

On March 15, 1976, the Lees Ferry Historic District was established on the National Register of Historic Places. The Lonely Dell Ranch Historic District was entered on the National Register on May 19, 1978. Map IV.2 displays the



MAP IV.2

HISTORIC DISTRICTS
LEES FERRY

GLEN CANYON NATIONAL RECREATION AREA
UTAH - ARIZONA

United States Department of the Interior - National Park Service

608	80090
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relationship of these Historic Districts to the Lees Ferry developed area. There are no known archeologic values related to structures of the Historic Districts.

VISITOR USE DATA

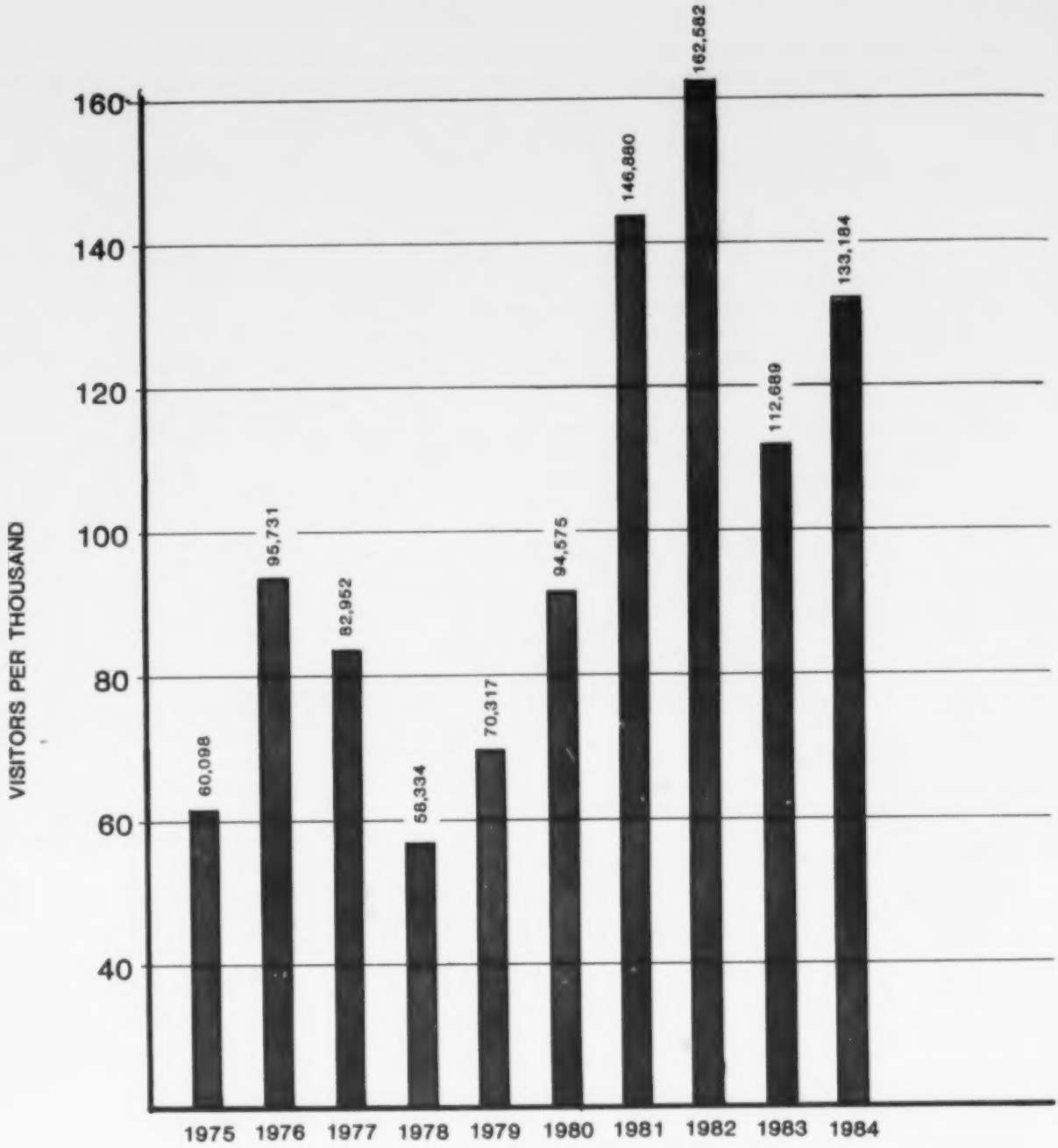
One of the intents of this planning effort is to identify the appropriate facilities and levels of development required to preserve and interpret Lees Ferry's resources with minimal adverse impact. An analysis of visitor use characteristics must be developed to determine development needs and potential impact levels.

Visitation occurs at Lees Ferry on a year round basis. The heaviest visitation occurs from March through October when the commercial river running trips are in progress.

10 Year Summary

Year	Visitation	% change
1975	60,098	+ 4.8
1976	95,731	+59.0
1977	82,952	-14.0
1978	58,334	-30.0
1979	70,317	+20.5
1980	94,575	+34.5
1981	146,880	+55.3
1982	162,582	+11.1
1983	112,689	-31.0
1984	133,184	+15.0

In 1981 the visitor counting techniques were revised. In 1983 the river was closed to boating for part of the year because of the high water releases.



ANNUAL VISITATION 1975 – 1984

LEES FERRY

GLEN CANYON NATIONAL RECREATION AREA

UNITED STATES DEPARTMENT OF THE INTERIOR - NATIONAL PARK SERVICE

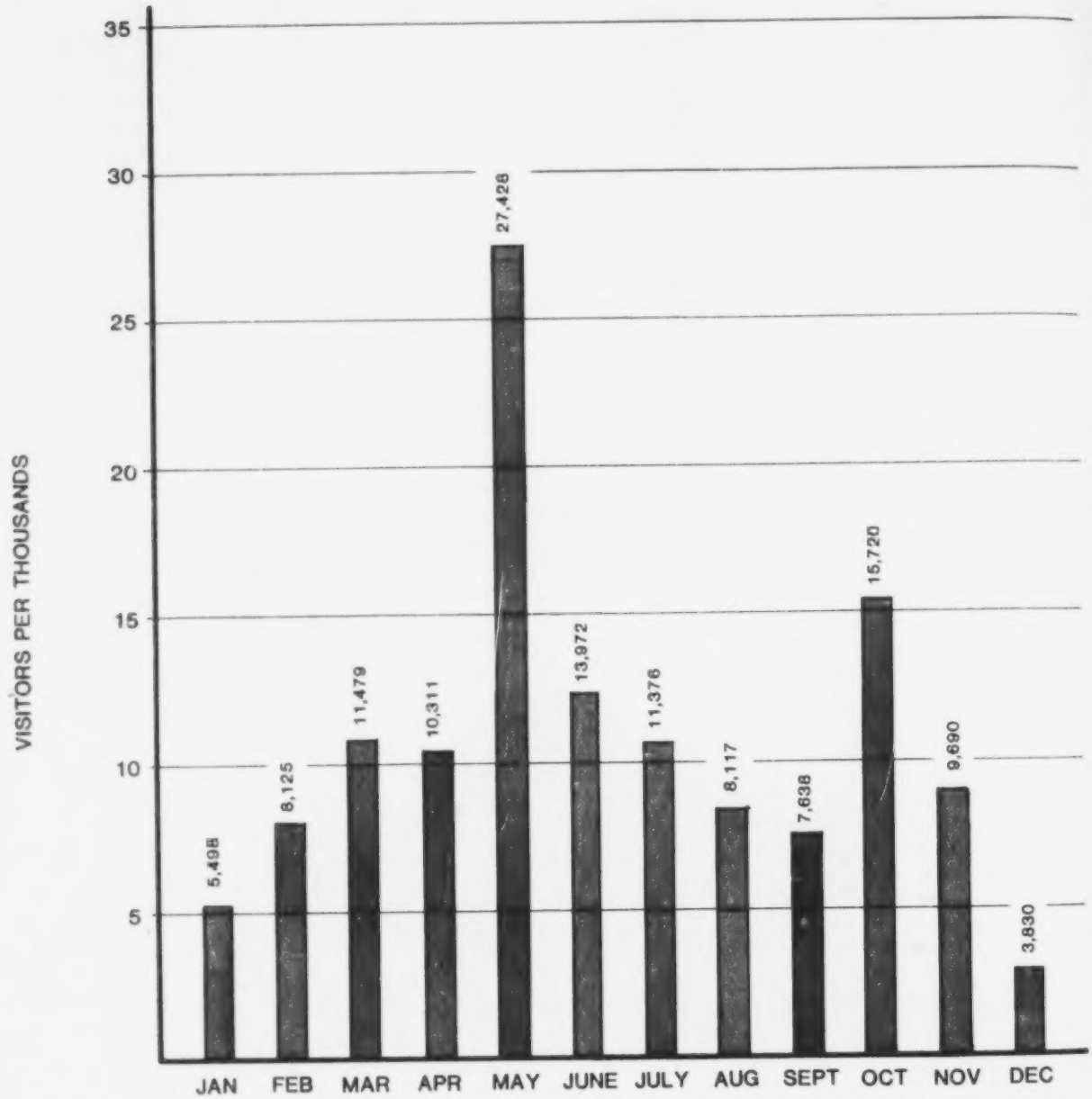
Monthly Summary	1984	1983	1982	1981	1980
January	5,498	5,597	3,703	2,686	2,558
February	8,125	6,894	7,470	3,358	3,039
March	11,479	11,468	8,852	5,430	5,536
April	10,311	9,588	16,152	9,471	6,856
May	27,428	18,052	19,066	17,779	9,838
June	13,972	4,069	23,676	18,438	13,180
July	11,376	9,320	23,672	20,170	12,259
August	8,117	9,976	19,126	19,577	13,911
September	7,638	10,989	15,432	21,221	9,842
October	15,720	10,688	12,609	15,146	8,435
November	9,690	7,436	7,773	9,038	5,719
December	3,830	5,612	5,051	4,566	3,402

Activities

There are four (4) major activities which attract visitors to Lees Ferry at the present time. The greatest attraction is the fishing. Lees Ferry has gained a reputation as one of the best trophy trout fishing areas in the country. It is widely known throughout Arizona and Utah. A great number of the fishermen using the area are considered to be "locals", from within a 300 mile radius. The second major activity at Lees Ferry is the river running activity. This accounts for approximately 40% of the visitor use at Lees Ferry. The third activity is camping. During the majority of the year, April through October, the campground is used by people passing through the area between National Park areas or by "snow birds" going from the warmer winter areas to the cooler summer areas. The fourth major activity is the historical scene or story. Some of the visitors to the area are there just to learn about the history of the area or are descendants of the Lees or Johnsons. The Lee family has been holding an annual family reunion at Lees Ferry for the past several years.

Visitor Origins

Approximately 40% of the visitation to Lees Ferry is river running related. These visitors are from all over the United States as well as from foreign countries. Approximately 50% of the visitors to Lees Ferry are fishermen. The remaining 10% of the visitors are generally on the way through the area between Grand Canyon north and south rims or other National Park Areas. The visitors tend to be from all over the United States. A



MONTHLY VISITATION 1984

LEES FERRY

GLEN CANYON NATIONAL RECREATION AREA

UNITED STATES DEPARTMENT OF THE INTERIOR - NATIONAL PARK SERVICE

study was conducted by Northern Arizona University School of Forestry on visitor characteristics from September 1982 to May 1983. This study focused on fishermen only. The results of the study showed that approximately 72% were from Arizona, 12.5% were from Utah, 5.8% were from California and 3.8% were from Colorado. The study also showed that for approximately 92.4% of the fishermen Lees Ferry was their destination with 7.6% stating that Lees Ferry was a stop on a longer trip.

Demand Projections

Visitation to the Lees Ferry area has been somewhat erratic over the last 15 years. There has been an overall increase of approximately 231.5% in that time period. A good deal of the increase is due to the development of the trophy trout fishery. In 1978 the limit of trout was reduced to 4. It is anticipated that the State of Arizona will further reduce the limit to 2 and place some type of restriction on lures/bait within the next year. This will most likely have the effect of reducing the visitation through a reduction of fishermen and/or length of stay. However, with the development of the historical interpretation of the area and development of interpretive facilities, a new type of visitor to the area is anticipated. There has been an increase in the number of tour groups visiting Lees Ferry as a stop for through traffic. With the increase and development of the historical themes and facilities, there will be an increase in this type of visitation. There has also been an increase in the number of river running trips through the Grand Canyon as the season is extended, mainly by private trips. This increase in trips should continue. There has also been a tremendous increase in the number of raft trips from the Glen Canyon Dam to Lees Ferry. It is anticipated that these trips will continue to increase in popularity and be expanded. Some trips currently offer overnight camping. It is anticipated that the visitation to the Lees Ferry area will continue to grow at approximately 10% per year.

Safety Hazards

The safety hazards are those associated mainly with this type of desert environment. There is always a danger of falling from cliffs in the canyon country, particularly while climbing and hiking. There is also a danger from the typical poisonous animals in the desert environment.

There are numerous scorpions within the Lees Ferry area, including the more venemous centruoides scorpion. There are numerous black-widow spiders. Rattlesnakes are also present in the Lees Ferry area. Probably the most hazardous aspect of the Lees Ferry area is the river. The temperature of the water is fairly constant and varies from 45 to 50 degrees F. between winter and summer. The reason for this is the fact that the water released from the Glen Canyon Dam comes from the lower region of Lake Powell where the water is always cold. This cold river water is hazardous in that hypothermia is a danger any time of the year. Many visitors are unaware of this condition. The water is also swift and care must be taken to maintain control of the boat and not be swept downriver into Marble Canyon. During the spring months, March through June, the releases from the dam can be high depending on the runoff to the north. The lake level must be maintained and releases depend on the inflow. Releases can cause surges as they are increased. This affects boats upriver mainly. Flash flooding can be expected at Lees Ferry during heavy summer thunderstorms. Occasionally this causes mud and/or debris to block the roads and could conceivably cause a vehicular accident. There is also a hazard from the extreme heat experienced during the summer months. Temperatures are often in excess of 110 degrees F. and can cause problems for hikers who run out of water or those simply not used to high heat and necessary precautions to prevent heat stroke or heat exhaustion.

Facility Analysis

Campground - The campground consists of 56 sites with shade structures, metal wind screens, picnic tables, and barbeque grills. The shade structures and wind screens are in very bad condition from abuse and vandalism and need to be repaired or replaced. There is no real planting in the campground and the irrigation system needs to be replaced. There are two (2) septic systems which are working well. There are two (2) concrete block comfort stations in the campground which are in good shape.

Ranger Station - The ranger station consists of a concrete block building of 1,209 sq. ft., including comfort station facilities, utility chase, large room for visitor contact, small room for storage, first aid room, and carport area where the existing fire pump is housed. There is a paved parking area to accommodate 22 vehicles. The ranger

station is a portion (1/3) of the original design which was to include an outdoor display area, a museum area, and amphitheatre complex. The remaining structure was to be built at a later date. The existing structure is in good condition. The existing 150,000 gallon water storage tank is located behind the ranger station.

Housing Area - The housing area is located directly across the access road from the ranger station, between it and the Colorado River. There are three (3) permanent houses, concrete block construction. Two of these were built by the National Park Service and the third was constructed by the U.S.G.S. for their use when they had a permanent man stationed at Lees Ferry. The U.S.G.S. turned their house over to Glen Canyon National Recreation Area when they moved their operation out of Lees Ferry in 1978. The condition of these houses is good. There is a single wide trailer within the housing area which is used for seasonal quarters. This single wide is in poor condition. The National Park Service housing area is highly visible from the campground, access road, ranger station, and launching/parking area at the Colorado River. When the initial development was designed, there was still a strong possibility that the Marble Canyon Dam would be built. Because of this, all of the development was placed above the projected high water level of the reservoir which would be created by this dam.

Motel Hill - This area is situated on a mesa overlooking the Colorado River just below its confluence with the Paria River. The area was leveled and road access constructed to it in 1971. At that time water, sewer, and electric utilities were extended to the site. A lift station/wet well was installed and sewer lines were run to the old maintenance area, where a three-cell sewage lagoon system was also constructed. This development was constructed to serve a concession motel/restaurant complex which was planned. Since then, all of the concession activities within the Lees Ferry developed area, with the exception of the river running activities, have been abandoned and bought out by the National Park Service. When the concession activity ceased, the lagoon cells were converted to a land fill operation.

Picnic Area - The picnic area consists of a paved parking area overlooking the confluence of the Paria and Colorado Rivers. The parking area will accommodate 26 vehicles and is used mainly by picnickers/sunbathers on a day use type basis. There are no picnic tables or grills.

Maintenance Area - The maintenance area consists of approximately 11,520 sq.ft. of fenced (8-foot chain link) area containing a 480 sq.ft. water treatment plant, a 120 sq.ft. maintenance shop, and a 480 sq.ft. storage shed. There is also a clear well for the operation of the water treatment plant. The water treatment plant has recently been rehabilitated and is in good condition. The shop is in fair condition, and the storage shed is in poor condition.

Grand Canyon Contact Station - Adjacent to the NPS maintenance area is a 1,536 sq.ft. double wide trailer which was rehabilitated by Glen Canyon National Recreation Area staff to serve as an orientation facility and offices for the Grand Canyon personnel at Lees Ferry. This facility also houses the Grand Canyon Natural History Association sales outlet and is utilized mainly for orientation for private river trips through the Grand Canyon. This structure is in poor condition.

Long-Term Parking - The long-term parking lot is approximately 1,000 feet from the launch ramp area. This lot is paved with curb and gutter. It will accommodate 49 single vehicles and 40 vehicles with trailers. It is designed for use by those visitors going upriver to fish or camp or on river trips through the Grand Canyon.

Launch Ramp - The launch ramp area is comprised of a two-lane concrete launch ramp and a gravel surfaced launch ramp. The concrete ramp is for the use of the general public for launching boats to go upriver to fish or camp. The gravel ramp is for use by the river runners for rigging their rafts and loading. The two ramps are separated by raised islands which separate the two types of use. At the head of the launch ramp area is a paved parking area for 18 single vehicles and 3 buses. There is also a comfort station with a septic system adjacent to the parking lot. The comfort station is of concrete block construction and is in good condition. There are also 80 feet of floating courtesy dock at the foot of the concrete launch ramp. This courtesy dock is in very poor condition. The State of Arizona has authorized funds under its State Lake Improvement Funds for the replacement of the courtesy dock unit. This should be accomplished in the near future. This parking area was designed to provide parking for those visitors to the historic district and not by the boating public. The river users were to utilize the long-term parking lot.

Lees Ferry Historic District - Adjacent to the launch complex is the Lees Ferry Historic District which is comprised of numerous stone structures. The most important of these structures is the Lees Fort, which was built by the Mormon Church in June 1874 to serve as a trading post and also a fortification in the event of an Indian attack. A short distance west of the fort is the post office. This structure was constructed somewhere around 1913 and was the official post office for Lees Ferry until 1923. Further upriver and closer to the river's edge is the Spencer building. This building was constructed as part of the "industrial area" by Charles Spencer to process gold from the Chinle formation. A short distance away from the Spencer building is a small stone building of a more modern appearance. This structure was built by the U.S. Geological Survey in the 1940's to provide a place to stay for their people who were monitoring the Colorado and Paria River flows. Also in this historic district are relics from the times of the gold mining operations. There is a boiler which was used to provide steam power as well as the sunken hull of the Charles H. Spencer.

Lonely Dell Ranch Historic District - Lonely Dell, the name given to the ranch Lee settled with one of his wives at the direction of the Mormon Church in December 1871. There are four (4) structures remaining from the late 1800's; a log cabin, a blacksmith shop, a barn, and a root cellar. There are also the foundations of two houses built by Warren Johnson which burned. The existing stone ranch house was built in 1935 by Leo Weaver and operated as a dude ranch and residence. The house and property were sold to Gus Griffin in 1937. It was later sold to a group of owners who used it as a farm and weekend retreat. A wood structure was added to the house in the late 1950's and is not of historic significance. The orchard was planted sometime during the 1960's. All of the structures are in poor condition and need stabilization and/or restoration. There is also a cemetary with markers dating from 1874 through 1928. There are also the remains of an irrigation system and flumes which carried water from the upper reaches of the Paria River to the ranch and fields.

Roads - There are a total of 8.21 miles of roads at Lees Ferry, 7.42 miles paved and 0.79 mile of graded road. These figures include the equivalent miles for parking areas and pull-offs. Main access road - 5.78 miles, good condition; River Drive - 0.54 mile, poor condition; campground access and loop roads - 0.52 mile, fair condition; picnic road - 0.27 mile, fair condition;

residence access road - 0.24 mile, fair condition; Lonely Dell ranch road - 0.57 mile, poor condition, maintenance access road - 0.07 mile, good condition; lagoon access road - 0.22 mile, poor condition.

Trails - There are three (3) trails within the Lees Ferry developed area. One is located at the pull-off at the Navajo High Bridge and leads to the canyon edge where there are several plaques commemorating river running. This trail is rough and in poor condition. If all of the plaques are removed to a display area near the launch ramp area, the trail could be closed. One trail leads into the Paria Canyon and Primitive area. This trail has recently been relocated but is in poor condition. The third trail is within the Lees Fort Historic District and leads from the fort area to the upper ferry site. It is used by fishermen for access to bank fishing as well as for its historical value. This trail is very primitive and in poor condition.

Utilities - Utilities provided by the National Park Service include water, sewage, and trash removal. Electricity is provided commercially by the Arizona Public Service. The water system consists of a clear well water intake in the Colorado River piped directly to the water treatment plant for treatment and disinfection. From the water plant the water goes directly to the Lonely Dell Ranch or to the water storage tank behind the ranger station. There are two lines to the Lonely Dell Ranch. One follows the road crossing the Paria River attached to the bridge and then to the ranch along the ranch road. The second line was recently installed and goes directly from the plant and under the Paria River to the ranch road and then along the shoulder of the road. The new line is strictly for irrigation. There is a line directly from the water treatment plant to the launch ramp area. The distribution line from the water tank serves the residential area, the ranger station, and the campground. There is a water line from the residential area down over the hill to the picnic area and then up to motel hill. The sewage systems at Lees Ferry are all septic systems. There are two septic systems in the campground, one at the ranger station, two in the housing area, one at the maintenance area, two at the launch ramp area, and two at the Lonely Dell Ranch. All of these systems are functioning properly. A sewage system was installed at motel hill which includes a lift station and wet well. The lift station connects with a 3-cell sewage lagoon complex located in the old maintenance area. This sewage system was constructed in 1971 and was intended to serve a

MAP IV.3

EXISTING CONDITIONS

LEES FERRY

GLEN CANYON NATIONAL RECREATION AREA

UTAH - ARIZONA

UNITED STATES DEPARTMENT OF THE INTERIOR · NATIONAL PARK SERVICE

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motel/restaurant complex which was planned by the concessioner. When the concession operation was terminated by the concessioner and bought out by the National Park Service, the sewage system became obsolete. The park decided to utilize the lagoons for a land fill operation as the existing area was totally used up, and the existing and projected development and facilities could be handled by the septic systems. The land fill operation was subsequently terminated and trash hauling is done by the Wahweap maintenance operation. All trash is hauled to the City of Page land fill. The A.P.S. electric lines are basically overhead and are highly visible in some spots.

Regional Facilities and Land Uses

Lees Ferry is located just off what is termed the "Golden Circle" or "Grand Circle Adventure", a 1200 mile route through northern Arizona and southern Utah. This route encompasses Glen Canyon National Recreation Area, Arches National Park, Canyonlands National Park, Mesa Verde National Park, Grand Canyon National Park (north rim), Zion National Park, Bryce Canyon National Park, Capitol Reef National Park, Natural Bridges National Monument, Hovenweep National Monument, Rainbow Bridge National Monument, Navajo National Monument, Canyon DeChelly National Monument, Pipe Springs National Monument, and Cedar Breaks National Monument. There are also numerous State parks, monuments, and historic sites within this region. The Arizona Office of Tourism, Utah Travel Council, and Colorado Tourism Board are all promoting this "Circle" to increase tourism within their respective states. Lees Ferry is on the direct route from the south rim of the Grand Canyon to the north rim of the Grand Canyon and receives a good deal of overnight camping by visitors between the two sites. The Lees Ferry area is high desert with sparse vegetation, averaging only about 5 inches of rain annually. The land around the area is Navajo Indian Reservation or Bureau of Land Management administered land. The nearest community of any size is Page, Arizona located 50 road miles away and having a population of approximately 7,500. Flagstaff, Arizona is 135 miles to the south. Areas of major populations are more distant: Phoenix, Arizona 278 miles south; Salt Lake City, Utah 380 miles to the north; Las Vegas, Nevada 289 miles west; Los Angeles, California 570 miles west; Albuquerque, New Mexico 381 miles east; and Denver, Colorado 598 miles northeast. Promotion activities for this "Grand Circle Adventure" have already had the effect

of increasing tourism in the entire general area and many tours are already booked. These activities are bound to have an influence in the increase of the visitation to the Lees Ferry area, particularly when interpretive facilities are developed. Lees Ferry has a very varied and rich historical background and will undoubtedly draw more visitors. There is an airport at Page which has commuter airline service on a limited basis.

A good deal of the surrounding area is utilized for grazing under grazing allotments from the BLM. There is also a buffalo ranch nearby. Lees Ferry is accessible mainly by vehicle from U.S. Highway 89A. There are no other roads into the Lees Ferry area. However, Lees Ferry can be reached by hiking through the Paria Canyon or down the Spencer Trail from atop the cliffs overlooking the ferry crossing area. Both of these trails are very strenuous and somewhat dangerous. There are also raft trips from the Glen Canyon Dam to Lees Ferry.

There are few landscape alterations to detract from the visual quality of the surrounding lands and spectacular views of breathtaking desert scenery. The potential to pollute the water and air is minimal because of the light use the area receives. One exception to this is the coal-fired Navajo Generating Station located near Page, Arizona. Potential to degrade the air quality at Lees Ferry does exist from this facility.

Other Influences

There are several commercial developments within the immediate area of Lees Ferry which offer visitor services, some on a seasonal basis and some year round.

Cliff Dwellers Lodge is located approximately 9 miles west of Lees Ferry on U.S. 89A. This facility consists of an 11 room motel, restaurant, service station, and minimal camper's grocery store. This facility is open all year. The owner has plans to expand this facility within the next 5 years.

Vermilion Cliff Lodge is located approximately 5 miles west of Lees Ferry on U.S. Highway 89A. This facility consists of 4 to 8 rooms available seasonally and 5 rooms open year round. There is also a restaurant, service station, minimal camper's groceries, and a beer and wine tavern. These facilities are seasonal from April through

November. There are no current plans for the expansion of this facility.

Marble Canyon Lodge is located approximately 1/8 mile west of the entrance to the Lees Ferry area on U.S. Highway 89A. This facility consists of a 33-room motel, large restaurant, service station, camper store with a good selection of groceries and fishing tackle. These facilities are open all year. There are plans to enlarge and improve these facilities within the next 5 years.

A small community, Badger Creek, is located behind and to the west of Vermilion Cliffs Lodge. Hatch River expeditions has a warehouse operation for their river running operations here. There are also approximately 14 private residences located here.

Commercial Operations Background

Lees Ferry is the starting point for all of the river trips through the Grand Canyon National Park. Commercial river runners utilize the gravel launch ramp at Lees Ferry to rig their rafts and load the passengers. There are 22 commercial river runners under contract with the Grand Canyon National Park who handle approximately 70% of the river trips through the Grand Canyon. The river running operations, both down river through the Grand Canyon and from the Glen Canyon Dam to Lees Ferry, are the only concession operations at Lees Ferry.

There was a concession operation at Lees Ferry from 1964 to 1978. Commercial developments at Lees Ferry were based on the premise that the Marble Canyon Dam would be constructed and the initial contract was issued to Fort Lee Company, Inc. This contract was revised for a twenty year period in 1971. The original concession contract called for the construction of a motel, restaurant, gift shop complex, a camper store, boat rental and docks, a service station, employee housing, and a warehouse and maintenance facility. Due to limits put on the raft trips through the Grand Canyon, the concessioner requested a change in scope of his contract and the motel complex was eliminated. He also decided that a boat rental operation was impractical and that was deleted. Originally, the concessioner had seven trailers which he used as rental units and employee housing, a camper store and restaurant and a service station. He constructed a warehouse to handle his operation as well as handle his river running service, which burned down shortly after it was